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THE MEDICAL CHRONICLE

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THE MEDICAL CHRONICLE

A MONTHLY RECORD OF THE

Progress of Medical Science

EDITED BY

E. M. BROCKBANK, M.D., F.R.C.P.

WHOLE SERIES, VOL. XLVIII.

FOURTH SERIES, VOL. XV.

APRIL, 1908, TO SEPTEMBER, 1908.

126076
22/1/13

MANCHESTER
SHERRATT & HUGHES
AT THE UNIVERSITY PRESS

(6)

(7)

ORIGINAL COMMUNICATIONS.

PAGE

Bruce, H. W. and Rayner, H. H. Two cases of acute glanders 1

Loveday, G. E., and Ramsbottom, Albert. The value of opsonic methods in diagnosis and treatment 145, 223

Mumford, A. A. Non-assimilation of fat in children, associated with defect in the biliary pigment in the fæces, but without jaundice 169

Telford, E. D. On hydrocele in children 73

Tylecote, F. E. Multiple furunculosis complicating Typhoid fever 77

White, Charles Powell. Lectures on the pathology of cancer 295, 365

(9.)

COLLABORATORS.

ARNOLD, M. B.
BARCLAY, A. E.
BERNSTEIN, J. M.
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CARVER, J. R.
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TELFORD, E. D.
TREVOR, R. S.
TYLECOTE, F. E.

WRIGLEY, P. R.
WRIGHT, GARNETT.

INDEX.

Accessory sinus, nose, intracranial complications, 259
—— mucocele, 272
Acetonuria, post-operative, 205
Acne rosacea, treatment by yeast, 408
Addison's disease in children, 29
Adolescents, scoliosis and nutrition in, 347
Adrenals, changes in arterio-sclerosis, 328
Age, advanced, contra-indication to operation, 40
Alcoholism and lead encephalopathy, 252
Anæmia of infancy, 102
Anæsthesia, local , in fractures, 123
—— rectal, 196
Angina pectoris, 117
Angina, ulcero-membranacea, 15
Aortitis, congenital syphilitic, 58
Aphasia, localisation and classification, 111
—— necropsy on case, 251
—— pathology, 119
—— with integrity of third left frontal convolution, 6
Appendicitis, in children, special features, 44
—— 100 operations, 276
Arterio-sclerosis, adrenals in, 328
Arteriotomy for thrombosis and embolism, 333
Arteriovenous anastomosis, 332
Arthritis, chronic, pathology, 125
—— infectious, strain as cause, 275
Atheroma, experimental, 59

B-paratificus, resistance of, 424
B-typhosus and paratyphosus, relation to bile ducts, 352
Bennett fracture, 341
Bier's treatment of acute inflammations, 342
Bile duct, common, stone in, diagnosis and treatment, 32
Bladder, tumours, extra-vesical treatment, 291
Blood-vessel suture, 333
Bones, long, anatomy relative to fractures, 423
Brachial plexus, surgery of, 44
Brain, tumour, case, 408
Breast, carcinoma, early, 343

Calculi, urinary X-ray diagnosis, 197
Carcinoma, following X-ray dermatitis, 34
—— pathology, 295, 365
Cardiac, nerve ganglion, signification, 54
Carditis, rheumatic, in childhood, 116
Carotid, common, ligature of, 203
Casts, urinary, origin, 426
Cerebellar hæmorrhage, 410
Cerebellum, diseases, classification, 324
—— familial degeneration of, 323
Cerebrospinal meningitis, 250
Chloroma, 283
—— eosinophilia, in cells of, 61
Cholecystectomy, contra-indications, 344
Cholecystitis paratyphosa, 327
Cholesterin in bile, separation of, 286
Chrysarobin in psoriasis, 407
Cirrhosis of liver in children, 258
Cleft palate operations, results, 122
Colitis, acute, and ulcerative, 26
—— muco-membranous, 265
Colon, radiography of, 207
—— bacilli, experimental immunity to, 63
Colour, sense of, theories, 208
Congenital anomalies of various organs, a case of, 55
Constipation, habitual, surgical treatment, 278
Cord, spermatic, malignant tumours of, 339
Coxa vara, ætiology, 273
Cystic vomiting in hepatic insufficiency, 403
Cystitis in infants, 7

Dengue, leucocytes in, 13
Desmoid reaction, 108
Diabetes, insipidus, etiology, experiments on, 24
—— ammonia in, 426
—— lipœmia in, 327
—— urine, action of formaldehyde on, 190
Diagnosis of internal maladies, new methods, 13
Diarrhœa, summer, 412
Digestive system, atony of, electric treatment, 354
Digitalis, treatment with, 428
Diphtheria, antitoxin, urticaria after, 427
—— fever in, 194
—— irregular pulse in, 114
—— paralyses, 261
—— relapses in, 114
Disinfection, by autane, formalin and permanganate of potash, 406
Ductus arteriosus, ligation, 332
Duodenum, injuries to, 197
—— ulcer, non-malignant, 27, 413

Dysentery, amœbic, surgery of, 123
Dyskinesia intermittens of the anus, 16

Eclampsia, renal decapsulation in, 124
Eczema, after prolonged baths, 327
Elbow joint fractures, operative treatment, 38
Elephantiasis, treatment, 428
Empyema, aspiration drainage, 270
—— 100 cases, 344
Endoaneurysmorrhaphy, 334, 335
Endocarditis, malignant, 268
Enteric fever, with feeble or absent Widal reaction, 23
"Epileptic character," the, 267
Ether narcosis, complications, 206
Extremities, crushes, surgery of, 205

Facial nerve, upper part, origin of, 130
Fat, non-assimilation of, in children, 169
Foot, weak, 46
Fractures, local anæsthesia, 123

Gall-stones, pathogenesis of, 286
Gastropexy and retention, 50
General Paralysis, 119
—— bulbar type, 326
—— pupil reflexes in, 9
Glanders, acute, two cases, 1
Glosso-pharyngeal and vagus nerves, new root of, 64
Glycogenesis without glycogen, 184
Gonococcus and meningococcus, 260
Gonorrhœa, treatment, 37
Graves' disease, milk of thyroidectomized goats in, 429
—— strumectomy in, 422
—— treatment, 434
Grafting fibula to tibia, 342

Hæmoglobinuria, kidneys in, 25
Hæmolysis, 100
Hæmophilia, 263
Hay fever, resection of nasal nerve in, 421
Heart, after prolonged work, 207
—— reflex, 117
Hemiplegia, nuclear facial, 253
Henoch's purpura, 109
Hernia, post-operative abdominal, prevention, 37
—— sliding, radical treatment, 36
—— umbilical, 199
—— ventral, 199
Hip-joint disease and sciatica, 411
Hirschsprung's disease, 128
Hydrocele in children, 73
Hydrocephalus, meningococcus, 264
Hypospadias, 203
Hysteria, myophony in, 110

Ileus, arterio-mesenteric, and acute dilatation of stomach, 416
—— gastro-mesenteric and acute dilatation of the stomach, 415

Infant feeding, physiology and pathology of, 179
Infants, uses of morphia for, 434
Intestinal obstruction, high, absorption of bile as cause of death in, 418
Intestine, small, resection of, 202
Intussusception, etiology, 31

Jaundice, due to maretine, 26
—— effect in duodenal digestion, 130
—— hæmolytic, types of, 179

Kernig's sign, 2,000 cases, 265
Kidney, movable, 48
—— mobile, shelf for, 281
—— impaired, 55
Knee, blood effusions, treatment, 343

Langerhans' islands, fate after ligature of duct, 424
—— hypertrophy in phloridzin-glycosuria, 131
Lenticular zone, lesions, 119
Leptothrix racemosa in modern bacteriology, 62
Leukæmia, acute lymphatic, 283
—— —— myelogenous origin, 99
Light, sense of, modern theories, 208
Lithotrity, modern, 275
Liver, abscess, 107
—— adrenal carcinoma, 56
—— lobes of, independence of, 209
—— in acquired syphilis, 189
—— melano-sarcoma of, 188
—— resection, 276
—— tuberculous, cure by operation, 208
Lumbar anæsthesia, 80 without failure, 348
Lung, acute abscess, operation for, 420

McBurney's point, 272
—— indirect method of eliciting pain, 42
Madelung's deformity, 121
Malignant tumours, elastic tissue in, 129
Maretine, jaundice due to, 26
Mastitis, cystic, chronic, 210
Mastoiditis in infants, 41
Mediastinum, syphiloma of, 188
Mega-colon, 43
Meningitis, acute, in syphilis, 119
Meningocele, dorsal, 107
Meningococcus and gonococcus, 260
—— hydrocephalus, 264
Mercury, uses in nasal and laryngeal tuberculosis, 66
Metacarpal bone, great, fracture, 341
Mongolism, 186
Muco-membranous colitis, 265
Muscles, hollow, 212
Muscle, influence of temperature on action, 131
—— and tendon transference, 50

Myasthenia gravis, 108
Myophony, 110

Names, loss of comprehension of, 184
Narcolepsy, epileptic, 254
Nephritis, recent work on, 82
Nerve cells, structure, 129
—— lesion, trophic, treatment, 340
—— trunks, surgery of, 195
Neuralgia, amputation, division of spinal roots for, 204
—— neurasthenic, 113
Neuropathies, substitution of diseases in, 184
Nystagmus, reflex induced, in disorders of the vestibule, 325

Œsophagus, bodies in, operations for, 338
—— diverticulum, operation for, 121
—— foreign bodies in, treatment, 125
Omentum, inflammation of, 40
Opsonic methods, 145

Palate, "adenomata" of, 340
Pancreas, accessory, 64
—— extirpation of, in dogs, effects of, 425
—— sclerosis, 18
Pancreatitis with gall stones, 101
Parathyroids, anatomy of, 211
—— implantation, 129
—— in thyroid operations 419
—— in dogs, experiments on, 425
Paratyphoid infections, 54
Parietal lobe, left, lesion, unusual symptoms, 409
Periarteritis nodosa, 58
Pericarditis, suppurative, 100 fatal cases, 256
Perisigmoiditis, 33
Perityphlitis, etiology, 183
Phagocytic action, alveolar cells of the lung, 57
Phonacoscopy, method to determine area of stomach, 14
Physical deterioration of children, 330
Plague, etiology, 405
Pleuritic effusion, symptoms of, 329
Pneumohydrothorax, 403
Pneumonia, by contagion, 21
—— complications, 100
Poliomyelitis, anterior, epidemic disease, 321
—— —— orthopædic treatment in early stages, 354
Polyarteritis acuta nodosa, 58
Polycythæmia, 17
Polymyositis, 191
Potassium iodide, uses in nasal and laryngeal tuberculosis, 66
Psoriasis, chrysarobin in, 407
Psychotherapeutic methods, 430
Ptosis of abdominal viscera, 39

Pylorus, hypertrophic stenosis, in infants, 271

Raynaud's disease, 22
Red cells, duration of life, 100
Reflexes, cutaneous and tendon, dissociation, 405
Reviews:
Adamson, H. G. Skin affections in childhood, 219
Atkinson, S. B. Law in general practice, 357
Bardswell, N. D., and Chapman, J. T. Diets in tuberculosis, 360
Barnhill, J. F., and Wales, E. de V. Modern Otology, 139
Barwell, H. Diseases of the larynx, 140
British Pharmaceutical Codex, 437
Brockbank, E. M. Life insurance and general practice, 218
Campbell, H. On treatment, 72
Campbell, H. Aids to pathology, 221
Campbell, J. Text-book of treatment, 143
Cavanagh, F. The care of the body, 144
Corner, E. M., and Pinches, H. I. Operations of general practice, 358
da Costa, J. C. Modern surgery, 134
Francis, F., and Fortescue-Brickdale, J. M. Chemical basis of pharmacology, 439
Gerard, E., and Lemoine, G. Treatment of tuberculosis by paratoxin, 361
Greene, R. H., and Brooks, H. Diseases of the genito-urinary organs and the kidney, 214
Guthrie, L. Functional nervous disorders in childhood, 135
Harman, N. B. Preventable blindness, 222
Harrison, E. Modern methods for securing surgical asepsis, 137
Hecker, R., and Trump, J. Atlas and epitome of diseases of children, 137
Horsley, V., and Sturge, M. Alcohol and the human body, 216
Hutchison, R., and Collier, H. S. An index of treatment, 71
Hughes, E. L. Squint and ocular paralysis, 133
International Clinics. Vol. iv., seventeenth series, 360
Keen, W. W. Surgery, 133
Kenwood, H. R. Public Health Laboratory work, 359
Kerley, C. G. Treatment of diseases of children, 138

Kerr, Le G. Diagnostics of the diseases of children, 137
Kyle, D. B. Diseases of the nose and throat, 362
Lewis, H. K. Catalogue of books, 358
Lloyd, W. Hay fever, etc., 363
Mann, J. D. Forensic medicine and toxicology, 293
Medical Annual, 294
Moore, N. History of the study of medicine in the British Isles, 290
Morris, M., and Dare, E. Light and x-ray treatment of skin diseases, 220
Murray, W. Rough notes on remedies, 361
Newman, D. Movable kidney, etc., 69
Nothnagel, H., and Rolleston, H. D. Diseases of the intestines and peritoneum, 70
Osler, W., and McCrae, T. A system of medicine, vol. i., 140
Osler, W., and McCrae, T. System of medicine, vol. iii., 290
Proceedings of the Royal Society of Medicine, 70
Quain's Anatomy, 11th ed., vol. i., 356
Richmond, G. E. An essay upon disease, 289
Robson, A. W. M. Cancer of the stomach, 136
Robson, A. W. M., and Cammidge, P. J. The pancreas, its surgery and pathology, 141
Rogers, L. Fevers in the Tropics, 94
Sajous, C. E. de M. The internal secretions, 440
Saundby, R. Medical ethics, 69
Savage, W. G. Bacteriological examination of water supplies, 288
Startin, J. Pharmacopœia for diseases of the skin, 220
Stelwagon, H. Diseases of the skin, 358
Stuart, H. The doctor in the schools, 138
Suckling, C. W. Movable or dropped kidney, 215
Sutherland, G. A. Treatment of disease in children, 135
The Year Book of Scientific Societies, 216
Thomson, A., and Miles, A. Manual of surgery, vol. ii., regional Surgery, 216
Waggett, E. B. Diseases of the nose, 221
Walker, N. Introduction to dermatology, 362
Wallace, C. S. Prostatic enlargement, 220
Warwick, F. J., and Tunstall, A. C. First aid to the injured and sick, 293
Wertheim, E., and Micholitsch, T. H. The technique of vagino-peritoneal operations, 217
Young, J. Chronology of medical history, 292
Rheumatisms, chronic, diagnosis, 255
—— under five, 256
Rheumatismus tuberculosus, 402
Rheumatoid arthritis, blood in, 99
Ring bodies in blood, 191
Rodent ulcer, histological notes on, 58
Rubella, 411
Sahli's desmoid reaction, 108
Sciatica, and hip disease, 411
Scoliosis, crawling treatment of, 65
—— and nutrition in adolescents, 347
Serum disease in man, 322
Sigmoiditis, 33
Skin-grafting, operation for, 280
Sleep and epileptic narcolepsy, 254
Spina bifida, 204
Spirochæta pallida, live staining, 351
Spleen, dislocation, operation, 350
—— excision, blood changes after, 281
Sprue, new muscular lesion, 51
Stomach, area, determination of, 14
—— acute dilatation and arterio-mesenteric ileus, 416
—— —— and gastro-mesenteric ileus, 415
—— dilatation, delimitation, 117
—— sarcoma of, 187
Stovainisation of the spinal cord, 66
Streptococci, opsonic power, variations in, 61
Strophanthin, intravenous injection, 249
Strychnine poisoning, fatal cases, 10
Syphilis, congenital, bacteriology, 351
—— meningitis in, 119
Tabes dorsalis, motor paralysis, early sign, 10
Talipes, congenital, 349
Talma's operation, 337
Tendon and muscle transference, 50
Teratoma, 107
Testicle, adenoma of, 341
—— new growths, 274
Tetanoid conditions in childhood, 182
Tetany parathyreopriva, 420
Thalamic syndrome, 261
Thoracic duct, operative injuries, 282
—— surgery of, 336
Thyroid gland, observations in, 60
—— disease, serum investigations in, 435
Tongue, neurology of, 211
—— tumours of base of, subhyoid pharyngotomy for, 38

Tonsils, hæmorrhage from, 195
Torticollis, 127
Transfusion and arterial anastomosis, 335
——direct, technique, 331
Trypsin, in treatment of malignant tumours, 213
Tubercle bacilli in the fæces, 425
Tuberculin eye reaction in children, 263
Tuberculosis, infantile, 115
—— of mouth, perlsucht bacilli in, 129
Turpentine, oil of, internal uses of, 431
Typhoid bacilli, experimental immunity to, 63
—— fever, epidemiology, 404
—— —— and bacteriology of, 427
—— infection of biliary tracts, 8
—— hæmorrhage in, treatment by gelatine, etc., 433
—— laryngeal complications, 251
—— multiple furunculosis complicating, 77
Typhoid, perforation of gall-bladder, cholecystectomy, recovery, 346

Ulcers, intractable, 407
Ureter, supernumerary suppurating, 63
Urethra, stricture, causes and varieties, 36
Urotropin, excretion in bile and pancreatic juice, 353

Vaccinia, generalised, 326
Veins, jugular, interpretation of pulsations, 12
Verrucæ plantares, 193
Vincents angina, 15
Vomiting, recurrent, of children, 28

Widal reaction, feeble or absent, in enterica, 23
Writer's cramp, 181

X-ray dermatitis and cancer, 34
—— in pediatrics, 267

INDEX TO AUTHORS.

Abrami, 8, 179
Abrams, A., 117
Adams, J. D., 275
Alessandro, E., 130
Anschütz, W., 276
Ashhurst, A. P. C., 346
Atwood, C. E., 119
Azema, M., 21

Bab, H., 351
Babcock, W. W., 195
Bachmeister, 286
Banks, A. G., 61
Bannerman, W. B., 405
Barker, A., 199
Barret, 117
Baumgartner, A., 43
Bégouin, P., 205
Berg, H. W., 321
Blackburn, 350
Blain, A. W., 427
Bloodgood, J. C., 415
Boidin, 119
Bolton, C., 258
Borelius, 32
Bowen, J. T., 193
Bradford, E. H., 50, 127
Bramwell, B., 51
Brenizer, A. G., 202
Brinckner, J. A. H., 404
Briscoe, J. C., 57
Bruce, H. W., 1
Bruce, I., 411
Brulé, M., 179
Bull, P., 107
Bullmore, H. H., 99
Bunzl, V., 208
Buttino, D., 188

Caldwell, E. W., 197
Camp, C. D., 10
Carlson, B., 107
Castellani, A., 428
Cates, B. B., 204
Cavazzani, A., 429
Chabrol, M. E., 18
Chaput, 66
Chene, H., 261
Chevassu, M., 341
Chute, A. L., 63
Cimorini, A., 129
Clark, L. P., 119
Clarke, J. M., 100
Claytor, T. A., 250
Cléret, M., 434
Coffin, L. A., 259
Collins, J., 410
Comby, 263
Consiglio, P., 110
Coombs, C., 116
Coppez, H., 208
Corbin, H. E., 411
Craig, 350
Crile, G., 331
Crowe, S. J., 353
Cumston, C. G., 39
Currie, J. R., 322

D'Abundo, G., 184
Dana, C. L., 111
Danziger, F., 326
Davies, D. S., 404
Deaver, J. B., 344
de Champtassin, 343
de Forest, H. P., 336
de Fourmestraux, J., 202
de Montet, C., 254
de Montyel, E. M., 9
Dercum, F. X., 6, 430
De Sanctis, S., 186
Dickson, W. E. C., 58
Dietlen, H., 207
Dieulafoy, 101, 407
Doberauer, G., 278
Drinkwater, J. W., 10
Dufour, H., 271
Duperil, R., 251

Ebstein, W., 189
Edmunds, A., 36
Edmunds, W., 60
Elder, J. M., 335
Ellis, A. G., 64
Esau, P., 402
Escherich, T., 182
Evans, H. M., 202, 419
Ewald, P., 121

Fedden, W. F., 349
Federoff, S. P., 38
Felberbaum, 29
Fiaschi, T., 36
Finkelnburg, R., 24
Flesch, J., 211
Flint, C. P., 38
Forster, 352
Franchetti, A., 425
Franck, O., 124
Frazier, C. H., 334
Fredet, P., 271
Froin, M. G., 100
Fruchthandler, 29
Frugoni, C., 108
Fry, F. R., 184

Garre, 422
Geis, N. P., 419
Gibbon, J. H., 334
Ginsburg, N., 211
Glénard, R., 209
Goldman, 121
Goodall, E. W., 411
Goodall, H. W., 426
Gordon, A., 409
Gottstein, E., 191
Gowley, J. W. S., 275
Graves, W. P., 213
Graves, W. W., 408
Grünberg, K., 66

Haecker, R., 125
Hall, I. W., 404
Hallock, F. K., 113
Halphen, E., 325
Halsted, W. S., 419
Hamer, W. H., 404
Hartenburg, P., 261
Hatch, E. S., 255
Hipsley, P. L., 31
Hoepffner, C., 249
Hoffmann, R., 435
Holmen, A., 109
Holmes, G., 323
Holmgren, G., 15
Holt, J. M., 123
Holt, L. E., 115
Holzbach, E., 348
Howell, C. M. H., 48
Howland, J., 28
Huber, F., 264, 403
Huguenin, 64
Hutchison, R., 265
Hutinel, 347

Jackson, C., 195
Jacod, M., 41
Janovski, T., 13
Joslin, E. P., 426

Klemperer, 327
Klotz, O., 58
Knapp, P. C., 204
Koshet, M., 330
Kottmann, K., 428
Kuh, R., 65
Kuster, 327

Labbe, 263
Laffer, W. B., 416
Landau, H., 328
Lanz, 272
Lazarus, P., 131
Legendre, R., 129
Legg, T. P., 340
Leggett, N. B., 196
Leighton, F. F., 61
Lemierre, S
Lépine, R., 184, 252
Lerda, G., 123
Leroy, M., 40
Lesage, A., 434
Leven, 117
Levey, A., 327
Lieblein, V., 337
Littlejohn, H., 10
Lombard, E., 325
Lommel, F., 17
Loveday, G. E., 145, 223
Lust, F., 249
Luys, G., 201

Mackenzie, J., 12
Mair, W., 56
Mandelbaum, M., 351
Marchand, L., 267
Martin, 339
Martini, E., 187
Mastroeni, L., 130
Matthew, E., 281
Maury, J. W. D., 418
Meyer, A., 268
Michaud, L., 190
Miles, A., 281
Milhit, J., 260
Milian, 326
Mills, C. K., 119
Minea, I., 130
Mitchell, A. B., 413
Moll, L., 7
Moore, J. W., 194
Morison, A. E., 344
Moritz, F., 207
Morse, J. L., 265
Morton, E. R., 354
Muir, R., 51
Mumford, A. A., 169
Mummery, L., 44
Munro, J. C., 332

Naab, J. P., 183
Neter, E., 128
Nicholson, G. W., 274
Noica, M., 405
Noon, L., 58
Nouet, H., 267
Novè-Josserand, G., 41
Nyrop, E., 50
Nutt, J. J., 354

Oehler, 16
Okinczyc, J., 212
Otte, A., 206
Ottenberg, R., 335

Pardoe, J., 37
Patel, M., 33
Patron, C., 130
Percival, A. L., 26
Peters, O. H., 114
Petrone, G. A., 102
Petrone, L., 188
Pfaundler, M., 179
Philips, S., 26

Pitres, A., 253
Pool, E. H., 420
Porter, C. A., 34
Power, D., 27
Poynton, F. T., 256

Quinby, W. C., 340

Ramsbottom, Albert, 145, 223
Rayner, H. H., 1
Richards, A. N., 28
Richards, H. M., 404
Rickett, G. R., 59
Rieser, W., 251
Rilliet, F., 406
Robinson, S., 341
Rochard, E., 343
Rolleston, J. D., 114
Rondoni, P., 128, 424
Rosenberger, R. C., 425
Rotch, T. M., 267
Rovsing, T., 42

Sabel, S. O., 99
Sabrazes, J., 251
Sacquépée, E., 54
Santesson, C. C., 54
Sarvonat, F., 22
Satterlee, G. R., 99
Saunders, E. W., 403
Schleip, K., 191
Schley, W. S., 270
Schmidt, J. E., 25
Schönwerth, A., 276
Seaton, E. C., 404
Sever, 127
Sezary, A., 254
Sherren, J., 44
Smith, E., 431
Smith, O. C., 40
Smith, R. M., 426
Soubeyran, 203
Speese, I., 210
Spiller, W. G., 119
Springer, C., 122
Stawell, 412
Steinthal, 197
Stephens, J. W. W., 94
Stewart, F. F., 333
Stewart, J. M. Y., 37
Stoney, R. A., 342
Stuart, W. J., 282
Swan, R. H. J., 343
Sweet, J. E., 333

Tagliomuro, P., 14
Tanon, L., 260
Tanon, M. L., 427
Tedenat, 339
Telford, E. D., 73
Thiemann, H., 338
Thiis, K., 108
Thompson, A., 281
Thompson, R., 423
Thomson, W. H., 434
Tiberti, N., 424, 425
Tilton, B. T., 420
Torrance, G., 332
Traina, R., 425
Treadgold, C. H., 283
Turner, A. L., 272
Tylecote, F. E., 77

Umber, 327

Vaschide, M. N., 181
Vaughan, V., 63
Vedder, E. B., 13
Verocay, I., 55
Verona, F., 131
Vincente, V., 62
v. Hoesslin, H., 23
v. Noorden, C., 82
v. Schrotter, H., 329
v. Zeissl, M., 408

Walker, N., 407
Warrington, W. B., 82
Waterhouse, R., 99
Watson, C., 125
Weber, A., 129
Weber, F., 273
Weil, 119
Wheeler, M., 63
White, C. J., 34
White, C. Powell, 56, 295, 365
Whitman, R., 46
Widal, F., 179
Wiesner, R., 207
Williams, J. T., 205
Witthauer, K., 433
Wilson, H. D., 265
Wilson, H. W., 48
Woodward, C., 342

Yonge, E. S., 421
Young, A., 280
Young, E. B., 205

THE MEDICAL CHRONICLE.
A MONTHLY RECORD OF THE
Progress of Medical Science.

TWO CASES OF ACUTE GLANDERS.

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In recent years acute glanders would appear to be a comparatively rare disease, the average number of deaths per year in England and Wales during the period 1901—1905 (inclusive) was but 5·4, and the disease may be reckoned as invariably fatal. We consider, therefore, the clinical histories of two cases which occurred recently in the Southwark Infirmary to be worthy of record; especially as the real nature of the disease is easily overlooked during the early stages of its course:—

Case 1. T. T., æt. 57, a cab-driver.

Condition on admission, March 28, 1907. Well-developed man, semi-delirious, and quite unable to give any reliable history. Temperature 103°; pulse 100; respirations 32. On the right leg there were two flat-topped subcutaneous swellings, about the size of a five shilling piece, fluctuating and very tender; the skin covering them was hyperæmic, but did not present any abrasion. In the skin covering the trunk there were a few small pustules quite discrete and not umbilicated. The heart and lungs were normal. The abdomen was moderately distended, the liver and spleen were impalpable. The patient rapidly lapsed into a typhoid state, there was continuous pyrexia, but the inflammatory swellings described did not alter materially.

On March 31st a copious eruption of pustules rapidly developed over the entire body, particularly the arms and face; there was also a profuse sero-hæmorrhagic discharge from the nostrils. The patient died later in the same day.

Cultures taken from the material in the pustules and from the nasal discharge yielded on potato, incubated at 37°C., in 24 hours a bright yellow growth, rapidly increasing during the succeeding two days and becoming chocolate coloured; films taken from the growth showed a pure culture of a rod-shaped organism, stouter and shorter than the tubercle bacillus, staining readily with ordinary basic dyes, but decolourised by Gram's method. From the character of the organism, the provisional diagnosis of acute glanders—arrived at on clinical grounds—was rendered positive. A post-mortem examination was not performed.

Source of infection. The man, as stated, was a cab-driver, and one of his horses was found to be suffering from definite chronic glanders.

Case II. F. B., male, æt. 33. A window-cleaner.

He complained of two tender swellings on the right lower extremity which, he stated, had formed spontaneously within the past week.

Condition on admission, July 27, 1907. Well-nourished man, healthy in appearance. Temperature 100·4°. There was a large subcutaneous abscess in the right calf and another smaller one on the outer side of the right thigh tracking forwards from under cover of the tensor fasciæ femoris; the skin covering these abscesses was healthy and presented no visible avenue for infection. The heart and lungs were normal; the abdomen was normal. Anterior and posterior examination of the nose revealed no abnormality; many of his teeth were carious and broken.

Course. There was continuous pyrexia throughout, the temperature fluctuating daily between 101° and 103°.

July 28. Localised swelling and redness on dorsum of left foot.

July 30. Abscesses in the right lower limb incised and drained; a quantity of hæmorrhagic odourless pus was evacuated. Incision of the swelling on the left foot revealed only brawny œdema of the subcutaneous tissues.

August 4. Right knee-joint acutely tender and distended with fluid. The abscess cavities in right leg were healing rapidly, and yielded no discharge.

August 5. Right knee-joint freely opened and several ounces of turbid yellow fluid evacuated. Cultures from this fluid and from the contents of the abscesses yielded growths exactly like those described in the previous case, both in appearance and in the character of the organism found.

August 7. Red and painful swelling over external condyle of left humerus. Slight œdema and tenderness over the region of the right frontal sinus. Examination of nose: nasal mucous membrane unnaturally hyperæmic and sensitive; no discharge from it or from the accessory sinuses; no visible lesions.

August 10. Swelling about the left elbow unchanged. Marked increase in the swelling in front of the right frontal sinus; incision of the skin was followed by free escape of pus. Heart: Dulness ½ inch to left of left nipple line; soft blowing mitral systolic bruit heard at apex. Lungs normal. Progressive deterioration in patient's general condition, he was rapidly becoming exhausted and commencing to be delirious.

August 11. Sudden and copious eruption of large pustules on face and neck; numerous red and indurated patches in the skin of the trunk and limbs. There was a profuse sero-hæmorrhagic discharge from the nose. The patient was violently delirious.

August 12. Death.

Autopsy. There were no suppurative foci in any of the internal organs, nor in any of the muscles. Heart: right ventricle dilated, muscle flabby. Lungs normal; stomach, intestines, liver and kidneys all normal to the naked eye. Spleen slightly enlarged and unusually diffluent. Nasal cavities: a few

small ulcerating nodules in the mucous membrane of both sides; thick purulent material in right frontal sinus.

Source of infection. This was never traced; the tenant of the house in which the patient lodged kept horses, but these were reported to be free from glanders.

The following points in these cases are worthy of brief comment:—

1. *Differential diagnosis.* Both these cases, but especially the second, which came under observation at a much earlier stage, resembled non-specific pyæmia as the characteristic pustular eruption and nasal discharge did not appear till near the termination; but the continuous though fluctuating pyrexia, the absence of any gross source of infection, and, above all, the presence alone of bacilli having the same morphological and cultural characters as the bacillus mallei served to distinguish the cases as acute glanders. The pustular eruption is not likely to be mistaken for that of small-pox, though it is true that some of the pustules did exactly resemble those of unmodified small-pox, but that disease was excluded with certainty by the rapidity with which the pustular stage was reached, namely, within 24 hours and by the freedom of the hands and wrists from the eruption. As a further confirmatory test it is recommended to inject the morbid products into the peritoneal cavity of the guinea-pig; if bacillus mallei is present an acute orchitis, rapidly proceeding to suppuration, is induced within two days of the injection; the bacilli are found in the pus.

2. The difficulty in ascertaining the site of infection. Presumably in both these cases it must have been through some minute abrasion in the skin where the abscesses first appeared; at any rate, there seems to be considerable doubt whether the bacillus can enter unbroken skin or mucous membrane. Rarely, in man, does the primary infection occur in the nose or its accessory cavities, but in nearly all cases these parts are ultimately involved. In man, infection is almost always direct from the

horse, and very uncommonly through an intermediate person or fomites.

3. The horses affected with glanders had not been suspected till transmission of the disease to man occurred; in the great majority of cases equine glanders runs a very chronic course, and, though usually producing evident lesions in the nose and its lymph tract, may be comparatively latent and the diagnosis exceedingly difficult. There does not seem to be complete unanimity among veterinary surgeons as to the value of mallein injections as a diagnostic test.

CHRONICLE.

Medicine.

A Case of Aphasia with Integrity of the Third Left Frontal Convolution.

DERCUM (F. X.). *Journ. Nervous and Mental Diseases*, vol. 35, Nov. 1907, p. 681.

THE author here attempts to develope Marie's heterodox views on the subject of aphasia. He describes the following case with comments.

A man of about 65 years of age had had a stroke about a year before he came under observation and since then numerous attacks of giddiness. In one of these attacks he developed right hemiplegia with complete inability to speak or understand spoken language. When he was later examined it was found that the motor aphasia was still complete and there seemed to be at least partial word-deafness; he was quite unable to carry out even the simplest instructions, unless the words were accompanied by gesture or pantomime. He was also unable to read or write, or even to form letters with his left hand. After death, which resulted from a fresh apoplectic seizure, it was found that the lesion to which the hemiplegia and speech defect were due had destroyed the left lenticular nucleus, the neighbouring part of the internal capsule, and had from here extended back along the inferior longitudinal bundle.

To explain this case the author assumes that the motor aphasia, or anarthria as he calls it, was due to the destruction of the lenticular nucleus to which he assigns the function of coordinating the complex movements of the lips, tongue, palate, larynx and the movements of expiration which are necessary for articulate speech, while the inability to understand spoken or written speech was due to the isolation of the zone of Wernicke or the intellectual centre of Marie,—the region of the auditory and visual word centres—owing to the degeneration of the inferior longitudinal bundle.

The brain, it seems, was examined only by the naked eye and attention was not directed, as far as can be seen from the paper, to the effect of the lesion on Broca's area and the other speech centres; it must have interrupted at least many of the afferent and efferent fibres of these centres.

GORDON HOLMES.

A Case of Congenital Muscular Atonia.

Leclerc (G.). *Gaz. des Hôpitaux*, Dec. 10, 1907, p. 1683.

The case which the author describes was a child who was born about three weeks before term. There was nothing noteworthy in the family history except that the mother had had three miscarriages previous to the patient's birth. Birth was normal; the mother had noticed quickening during pregnancy. The child's condition was not observed by the parents till after an attack of broncho-pneumonia at the age of seven weeks; then it was seen that the child was almost quite paralysed, scarcely able to move her limbs or hold her head erect. This condition improved slowly. When examined at the age of four years the child could not sit erect if unsupported, and there seemed to be a general flaccid paralysis of all limbs. It was not, however, a true paralysis but only a state of muscular atonia, for when lying down all movements were easily performed, but they were very feeble. The articular ligaments were also lax, allowing an excessive range of movement at the joints. The muscles were very soft to palpation, but they were not atrophied; unhappily their electrical reactions were not examined. None of the muscles innervated by the cranial nerves were affected. The knee-jerks were absent; sensation was intact. The skin, especially that of the legs, was thickened and rather suggestive of myœdema. There was no evidence of rickets or other bone disease.

Although nothing abnormal was noticed in the child till the age of seven weeks, the author believes the condition was certainly congenital. The case is a typical example of amyotonia congenita as it was originally described by Oppenheim. It is most important in diagnosis to separate these cases from the primary myopathies with which they can be easily confused; the chief points of difference are: the absence of heredity, the congenital nature of the disease, the wide extent of the affection, the absence of muscular atrophy, and above all the tendency to improvement.

Gordon Holmes.

Cystitis due to B. Coli in Infants and its Complications (Meningitis).

Moll (L.). *Prag. med. Woch.*, 1907, No. 39.

This is the commonest form of cystitis in infancy and is sufficiently frequent to call for more frequent examination of the urine in infants. The initial symptoms are restlessness, pallor, the cry of pain, and lessened desire for drinks. The urine is turbid, acid or neutral, and contains albumin up to 0·1 per cent; turbidity is due to pus and epithelial cells and the presence of B. Coli which is often in pure culture. This condition is not to be confounded with Bacteriuria of which the writer has observed

a number of cases in infants due to B. lactis ærogenes. In the latter case inflammatory symptoms are absent, the urine resembles a bouillon culture and has an unpleasant stale smell and usually acid reaction.

As regards the source of infection, there are hypothetically three possibilities:—(1) Access by the urethra, especially in females; (2) from the blood by way of the kidneys; and (3) from the bowel. The later, however, presupposes a lesion of the intestional mucous membrane, which in some cases the autopsy has failed to show. A certain number of cases, however, do not fall into any of these classes and their causation is obscure.

The writer records two cases of cystitis both in male infants, breast-fed and healthy. One had originally a balanitis and the bladder was probably infected during the irrigation of the preputial sac; there was severe general illness, but the infant made a recovery under the administration of urotropin, though bacilli continued to be found in the urine for some time after. The other child developed meningitis as a complication. The lumbar-puncture fluid was turbid and showed pus cells and short rod-shaped bacilli with marked phagocytosis, and the cultural characteristics were those of B. Coli. The autopsy revealed suppurative cerebro-spinal meningitis, double otitis media, and suppurative nephritis. The meningeal pus showed B. Coli in pure culture; the otitis was diplococcal. There was no lesion of the gastro-intestinal tract.

As regards the source of infection in this case neither external (1) nor intestinal (3) origin could be adduced. The occurrence of phagocytosis negatived any suggestion of mere post-mortem invasion by B. Coli. The writer mentions the fact, as possibly significant, that at that time the institution was overcrowded and that cases of suppuration were rather prevalent amongst nurses and children. The frequently epidemic character of septic diseases in the new-born in institutions has been noted by Ritter and others, particularly in the case of suppurative meningitis. Cases of meningitis and of septicæmia in infants due to B. Coli have been described by various writers, but Moll has not been able to find in the literature any similar case in which meningitis due to this organism appeared as a complication of cystitis.

G. R. Mill.

Typhoid Fever and Descending Infection of the Biliary Tracts. Lemierre and Abrami. *La Presse Médicale,* October 30, 1907. The theory generally adopted until recently has been that the presence of the typhoid bacillus in the gall-bladder was to be explained by an ascending infection of the biliary tract. Now that typhoid fever is considered in the light of a blood infection, as opposed to a local lesion of the intestine, the theory is gaining ground that the bacilli present in the blood are eliminated by the

liver, arrive in the gall-bladder, multiply there, and reach the intestine therefrom. The authors set out to investigate this theory by experiments on rabbits, and also to see if the bacilli so eliminated could set up a cholecystitis. Typhoid emulsion was injected into the superficial vein of the ear, and the rabbits were killed at times varying from six hours to six days thereafter. Of 26 animals so injected, in 18 the micro-organism which had been so employed was found in the bile at autopsy. Four rabbits not included in the above series were killed at later intervals, and in these cases the bile did not contain the organism. In most of those cases where the bacilli had been found in the bile, the walls of the gall-bladder showed changes; the walls were thickened; thick mucus adhered to them; the mucosa was inflamed; in one case there was a pericholecystitis with adhesions to the liver. In all these cases there had been no preceding trauma of the bile passages. The blood of the rabbits always contained the bacillus during the first four days after injection, while on the sixth day it was always free from bacilli. It is possible that typhoid bacilli found in the stools of enteric patients have often had their origin in the gall-bladder, and in the cases of the so-called "typhoid carriers" the opening and draining of the biliary passages may suffice to rid the stools of their dangerous contents. If the catarrhal affection of the biliary passages is commonly latent in enteric, yet it is capable of giving rise to the symptoms of most typical infective jaundice; and it is not a long step from this to argue that infective jaundice has a hæmatogenous origin as a rule, this descending cholangitis being its substratum. This is especially probable in certain cases of simple chronic jaundice and in Hanot's cirrhosis.

FRANK E. TYLECOTE.

Isolated and simultaneous alteration of the pupil reflexes in General Paralysis.

MARANDON DE MONTYEL (E.). *Revue de Médecine*, Nov. 10, 1907.

THE pupil reflexes were examined in 136 cases of general paralysis, and the examinations were repeated at intervals from an early stage of the disease up to the time of death. 70 of the patients died in the third stage: the rest succumbed at an earlier period. The results of the investigation are summarised in 34 conclusions, of which the following are of chief importance, the percentages given in the original being omitted: In the majority of cases both pupils and both reflexes (light and accomodation) are simultaneously involved, and as a rule to the same degree. In a considerable minority, however, one reflex is attacked without the other: but the involvment of one eye alone is very rare. If a case ends in the third stage, it will always be found that at some period both reflexes are affected. Diminution is

commoner than total abolition, but this varies according to the stage of the disease. Exaggeration is the least common form of abnormality: it is a very early phenomenon and generally lasts but a short time. Affection of one eye alone, when met with, occurs in the first stage. The light reflex is more frequently involved than that of accomodation, and the separation between the two is mostly met with in the first stage. Diminution in this stage is more common than abolition. In the second stage the two reflexes are more persistently affected together: exaggeration is not met with, but diminution is again in excess of abolition, though to a less extent than before. In the third stage, the two reflexes are equally and simultaneously involved. Abolition is now the rule.

JAS. W. RUSSELL.

Motor Paralysis as an early sign of Tabes Dorsalis.

CAMP (C. D.). *Med. Record,* Nov. 23, 1907.

LAPINSKY has recently drawn attention to the relative frequency of motor paralysis in even the earlier stages of tabes dorsalis. Camp records two examples here. In the first, which was a typical cases of tabes that commenced about nine years previously with shooting pains, the patient rather suddenly developed symptoms of right foot-dropowing to paralysis of the muscles of the anterior tibial group; in the second case, too, in which the disease had been of about a year's duration, there was complete foot-drop on the one side and partial on the other, with complete loss of the faradic excitability of the muscles affected.

It seems impossible to decide whether these peripheral palsies in tabes are due to a localised neuritis or to a primary degeneration of the cells of the anterior horns of the cord. The author inclines to the latter opinion.

GORDON HOLMES.

Three Cases of fatal Strychnine Poisoning.

LITTLEJOHN (H.) and DRINKWATER (J. W.). *Edin. Med. Journ.*, 1907.

ALL three cases reported are of great interest and importance.

In the first case, a lady, æt. 36, suffering from phthisis, had prescribed for her by her medical attendant, and had dispensed for her by a chemist, an incompatible mixture containing liq. arsenicalis and liquor strychniæ. The lady had taken one bottle of this mixture without ill effects, and had finished the second bottle except a few drops of liquid and a little sediment. At 10 a.m. one morning she added some water to this sediment, shook it up and drank it. At 12-20 p.m. she died from strychnine poisoning. No post-mortem was made. The authors

consider, whilst the doctor and druggist are both to blame, the druggist was more culpable, as he ought to notice errors in prescribing, and should have refused to dispense a mixture likely to prove dangerous, especially, as in this case, where the incompatibility is specifically pointed out in most text-books on the subject.

In the second case, a lady, æt. 30, had been taking powders of quinine, phenacetine and exalgine for neuralgia. The powders being finished, a fresh supply of six was sent for, and one was taken whilst the lady was dressing. Within five minutes she felt faint, and her jaws seemed stiff, and within fifteen minutes she had a general convulsion, and became quite unconscious. This lasted about a minute and a half, but three more convulsions succeeded, and at the end of thirty-five minutes she was dead. Post-mortem examination showed the right side of the heart distended with dark fluid blood, the left ventricle flaccid, not contracted, and containing a little blood. The lungs, liver, spleen and kidneys were all engorged with dark fluid blood. There were in fact the usual signs of death from asphyxia. The stomach contents gave no evidence of the presence of strychnine on analysis, but the poison was found in the blood and in the walls of the stomach itself. Examination two years later of the remaining (pyloric) half of the stomach still gave evidence of the presence of strychnine. The powders on analysis were found to be composed of quinine, phenacetine, and in each 1 gr. of strychnine in place of 1 gr. of exalgine. It is further important to note that the presence of phenacetine in the powders prevented any development of the purple colour in the bichromate of potash and sulphuric acid process. Such interference was well known in mixtures of strychnine with brucine and morphine, but apparently this is the first case recorded when phenacetine had a like effect.

The third case described is that of the Cunnock shortbread poisoning case, where several persons were poisoned, one fatally, by shortbread sent by post, the icing of which had been largely adulterated with strychnine. In this case a man named Brown was put upon his trial for murder, and the chief point of interest was what the Lord Justice-General, in charging the jury, said regarding insanity as a defence to a crime. The Lord Justice said as follows:—"It means insanity which prevents a man from doing what a truly sane man would do and is entitled to do—maintain in sober sanity his plea of innocence, and instruct those who defend him, as a truly sane man would do." The authors say that the Lord Justice-General's pronouncement is likely to form an important precedent in Scotland, in that it goes further than Sir James Stephens' dictum, that a so-called insane person is liable, if the absence of the power to control his own conduct has been produced by his own default.

W. Sellers.

The Interpretation of the Pulsations in the Jugular Veins.

MACKENZIE (JAS.). *Amer. Journ. of the Med. Sciences,* July, 1907.

IT is difficult, if not impossible, to give a satisfactory abstract of the contents of this paper as it is necessary for its intelligent appreciation to carefully study the numerous pulse tracings that space does not allow of reproduction here. The author applies the term *auricular venous pulse* to those forms of pulsation in which the auricle occupies its normal place in the cardiac cycle, although in many cases evidence of the effects of ventricular systole are present as well. On the other hand the term *ventricular venous pulse* denotes a pulse which does not show any evidence of auricular systole at its normal period in the cardiac cycle, the whole of the wave occupying the period of ventricular systole. *The auricular venous pulse* is first considered and the different cardiac factors concerned in the production of its different waves and depressions are discussed. Several arguments are adduced in favour of the contention that the small wave immediately succeeding the auricular wave is due to the impact of the carotid on the air in the receiver, and not due to a wave in the vein. This wave is termed the *carotid wave.* Succeeding the auricular depression is a wave of varying size which is termed the *ventricular wave* and the author is of opinion that this wave is caused by ventricular systole and usually indicates some amount of tricuspid regurgitation. The passage of the auricular form of the venous pulse into the ventricular is considered at length and it is strongly insisted that it is merely a question of increase in the ventricular wave due to free tricuspid regurgitation combined with auricular systole of diminishing power. When the *ventricular venous pulse* is developed, it is an indication that either auricular systole is absent, due to weakness of the muscle in the auricular wall, or perhaps in some cases the auricle contracts at the same time as the ventricle and hence its presence is not marked with any definiteness in the venous pulse. Most of the observations on which these conclusions are based were made on cases of mitral stenosis in the later stages of which the following events happen simultaneously: (1) Disappearance of the auricular wave from the jugular pulse and apex beat, (2) disappearance of the auricular systolic (crescendo presystolic) murmur, and (3) arrhythmia of the heart. A further conclusion is arrived at, namely, that when the ventricular venous pulse is present the heart's contraction proceeds no longer from the normal place, that is at the mouths of the great veins, but probably at the fibres joining the auricle and ventricle, a conclusion that seems to be confirmed by some anatomical facts observed by Dr. Keith in a number of hearts of patients on whom Dr. Mackenzie had made elaborate clinical observations.

E. N. CUNLIFFE.

The Leucocytes in Dengue.

VEDDER (ED. B.). *New York Med. Journ.*, August 3rd, 1907. As a result of numerous observations the following conclusions were arrived at:—

1. No appreciable changes occur in the red count.
2. Leucopenia is a constant feature.
3. A marked reduction in the polymorphonuclear count takes place early in the disease. Coincident with this disease is an increase in the small lymphocytes and to a less extent of the large lymphocytes. In no other disease does such a rapid reversal of the normal differential count occur and if the blood in a doubtful case be examined daily for three days, commencing with the day of onset, the diagnosis of dengue can be made with a high degree of probability from this sudden change in the proportions of the polymorphonuclear cells and lymphocytes.
4. There is a gradual increase in the number of eosinophils, especially during the last three or four days of the disease.
5. In distinguishing dengue from malaria the blood count is not of much value since the detection of malarial parasites is usually so easy and so certain.
6. The differential diagnosis between dengue and yellow fever is assisted considerably by the blood count. In yellow fever the leucocytes are either normal or increased, the polymorphonuclears are present in normal proportions, and increase in small lymphocytes is noted and eosinophiles are very scarce.

E. N. CUNLIFFE.

New Methods employed in the Diagnosis of Internal Maladies.

JANOVSKI (TH.). *Rev. de Méd.*, September, 1907.

THE early history of medicine was one of 'anatomical' diagnosis. The application of auscultation and percussion assisted in making this method one of supreme importance. Later the causes and the course of pathological processes began to be realised and the era of 'pathological' diagnosis began. The future is to be one of 'functional' or 'potential' diagnosis, that is to say the physician must know the capacity for work of the organism and different organs comprising it. Along this path some considerable progress has already been made. The introduction of test-meals combined with the use of the stomach tube has furnished means whereby gastric efficiency may be determined, and Schmidt and Strassburger have proposed similar methods for the investigation of intestinal complaints and there is no doubt that, however unsatisfactory present results may be, the methods proposed are full of promise for the future. In determining the adequacy of the liver, several factors have to be taken into account for the functions of the liver are complex, but already some progress has been made. It has been shown

that decrease in the quantity of urea excreted from the system combined with an increase of the ammoniacal combinations is proof that the liver is failing in its urea-forming function. The glycogenic and toxin-destroying functions of the liver are more difficult to judge. Similarly it is a question whether increase of urobilin in the urine is or is not a sign of hepatic inadequacy. The kidney is an organ which is so situated that it does not allow of anatomical methods of diagnosis being applied to it and therefore numerous researches have been directed to the discovery of means of testing its functional activity. Methylene blue and phloridzin have their supporters as drugs by means of which renal adequacy can be determined, and more recently the introduction of cryoscopic methods promises brilliant results. These are examples of progress along the pathway of 'potential' diagnosis—a pathway which we may hope may lead us to the complete and profound knowledge which is the supreme ideal of medicine.

E. N. Cunliffe.

Phonacoscopy, a New Method of Determining the Area of the Stomach.

Tagliamuro (P.). *Riv. crit. di Clin. med.*, Florence, 1907, p. 745.

The author enumerates the various methods that have been employed in the physical examination of the stomach, with particular reference to the use of the recently invented Phonacoscope. Of methods depending on inspection he has little to say. Eight various methods of gastric palpation are described; twelve methods of percussion have been invented to facilitate estimation of the size or position of the stomach, and auscultation can be applied in four different ways to the same purpose. He enumerates various special modes of examining the stomach: such as gastrodiaphany, with an electric light in the stomach; or the use of *x-rays*, with a leaden sound or leaden bullet in the stomach, or after a quantity of a bismuth salt has been ingested; and nine other methods are described, but need not be further noticed here. In 1906, Landolfi and Papale invented their Phonacoscope, which is, practically speaking, an instrument for percussing regularly with any given degree of force. It consists of a bell (of metal, glass, or ivory) containing a cylinder of the same material, up and down which a rod runs. Above, the rod ends in a button; below, it ends in a similar button best made of hard rubber; and it is held down by a spiral spring, so that its lower end rests against a plate (of wood or metal) closing in the bell below. This instrument can be held against any part of the body, and the patient can effect percussion of any required degree of loudness by pulling up and letting go the button at the upper end of the rod. Tagliamuro has employed the

phonacoscope for estimating the gastric area; the stomach is first inflated, either by giving 2 grms. of tartaric acid followed by 2 grms. of sodium bicarbonate, or by the injection of air. The phonacoscope is then placed and kept at a given point on the gastric area, and entrusted to the patient, who makes percussion therewith. The medical man then auscultates the area, moving the bell of his stethoscope about to estimate its size. Tagliamuro highly praises this method of auscultatory percussion thus applied; it needs the services of only one medical man, and gives trustworthy results.

A. J. Jex-Blake.

Angina Ulcero-membranacea, or Vincent's Angina.

Holmgren (G.). *Hygiea*, Stockholm, 1907, p. 1095.

Plaut, in 1894, and Vincent, in 1896, described a severe form of sore-throat which has since received a number of other names—Angina ulcero-necrotica, s. diphtheroides, s. chancriformis, angine à spirilles et bacilles fusiformes—and has given rise to much controversy. Holmgren details 10 cases of this angina seen recently; 6 were diagnosed as diphtheria and sent to the fever-hospital, 3 were diagnosed as faucial syphilis. In Stockholm, therefore, these cases are not rare; in Copenhagen, on the other hand, only 2 have been met with in the last 2½ years. In 7 of these 10 cases, the earlier stages were much like those of diphtheria, but Löffler's bacillus was not to be found in them. Two suggested syphilis strongly; but differed from specific disease in reacting readily to local treatment and in showing no signs of reaction at the edge of the ulcer. Most of the cases began with bleeding from the gums, and exhibited more or less gingivitis marginalis: spirilla and fusiform bacilli are known to be common saprophytes in the mouth, particularly at the edges of the teeth. But they do not occur in such masses in the ulcers of lues or diphtheria as they do in the ulcers of Vincent's angina, as Holmgren's researches have shown. And Vincent's angina often escapes diagnosis because the spirilla and fusiform bacilli do not grow well in the streak cultures upon ox-serum commonly made for diagnostic purposes when diphtheria is suspected.

The malady begins with redness and swelling of and about the tonsils, in a patient with more or less gingivitis marginalis or stomatitis. Then small, shallow, superficial necroses appear, with fibrin deposits on them, and grow larger; their edge is irregular, and there is little reaction round them. Shallow ulcers form, with finely granular floors, and bleed readily; they tend to spread but little, but sometimes deepen considerably. The patient is not very ill, and often shows no febrile reaction at all: thus there is a contrast between the severe local and slight general symptoms, and fœtor ex ore is usually marked. The

general symptoms are often graver in children—only one of Holmgren's cases was in a child; but the necrosis and ulceration may go on to gangrene and even noma in an adult, and other severe complications (albuminuria, endocarditis, pleurisy, paralyses, gastro-intestinal disturbances in children) have exceptionally been recorded, and so has relapse. The prognosis, however, is usually good; the condition lasts 8—14 days (Vincent), 3 weeks, or from 1 to 10 weeks (Kelson). The membranous form recovers more rapidly than the ulcero-necrotic; one of Holmgren's patients was ill for a month; most were cured within a week. Persons under 30 are most affected, and the disease is not seen in infants; it is not certain how far it is infectious, but some of the cases are highly so. The diagnosis from diphtheria and from syphilis can only be made bacteriologically. The B. fusiformis is 6—12 μ long, spindle-shaped, is gram-negative, and stains ill with methylene blue, but better with carbol-fuchsin. The spirilla are very abundant; spirochætes with 3 or 4 turns are found, and stain but slowly. Neither the B. fusiformis nor the spirilla have been obtained in pure culture; other bacteria are commonly present besides these two varieties, and the views that the two live together symbiotically or are forms of a single organism have both been expressed. Eichmayer, of Dresden, after studying 24 cases (1905), concludes that the spirilla are saprophytes unconnected with the pathogeny of Vincent's angina; sp. sputigenum and spirochæte dentium both occur habitually in the mouth. Treatment by gargling with 2 per cent. H_2O_2 solution, and painting with 2 per cent. $CuSO_4$ solution or 0·2 per cent. $HgCl_2$ solution, is almost always rapidly curative. The literature is given, together with a plate showing the characteristic bacilli and spirilla.

A. J. Jex-Blake.

A Case of Dyskinesia Intermittens of the Arms.

Oehler. *Deutsches Arch. f. klin. Med.*, Leipzig, 1907, 92, p. 154.

The patient, a slight but well-nourished man of 40, who had nothing of importance in his family history, and had never had syphilis or used alcohol or tobacco in excess, was well and able to work until May, 1905, when he was troubled by weakness and coldness of the left arm. In the following August he further had sharp pains in the muscles of the left upper arm, and both arms were often chilly. In December he had a severe attack of articular rheumatism, and lay up till March, 1906; this left him with a slight degree of morbus cordis, but seemed not to influence the state of his arms. In May he came into Hospital, complaining of attacks of chilliness in the hands and arms brought on by exposure, and more particularly by muscular work and bending the forearms; these sensations being followed

by pains, paræsthesia, formication, and weakness, all mainly in the left arm. After a short rest these symptoms would vanish, the arms feeling strong once more; these symptoms rapidly returned if work was resumed.

On examination, the nervous system was found to be normal, there was no anæmia, and beyond a basal cardiac murmur nothing was found to be wrong with the viscera. The musculature of the arms was fairly well developed; there was no muscular atrophy or reaction of degeneration; the fingers became suddenly pale while the examination was proceeding, having before been red. No pulsation could be felt in the left brachial or radial arteries, nor could the radial itself be palpated; on the right side the brachial and radial pulses could both be felt. Set to work with a paving-stone hammer, the patient had to stop in a few minutes, because of pains and weakness in the arms; the hands were then very cold and pale. The author remarks that the case was clearly one of Charcot's "intermittent claudication," and discusses the pathology of the condition. Some hold that it depends solely upon some anatomical change in the blood-vessels of the affected part; others believe that a spastic contraction of the blood-vessels due to nervous impulses also contributes to its production. Oehler found that in his case the right radial pulse was unaltered in the attacks, and that the left radial pulse could not be felt at any time; and that when the blood-flow was diverted to and reddened the skin (hot air bath), cramp-like pains were brought on in the upper arm similar to those brought on by muscular exertion. Vaso-dilatation in the arms could not be brought about; the pallor of the skin occurring when the arm-muscles were used was regarded by Oehler as an attempt on the part of the organism to increase the blood supply to the muscles, the brachial artery being incapable of dilatation. The patient showed no signs of syphilis, gout, diabetes, renal disease, alcoholism, or thickening or calcification (*x*-ray examination) of the arteries; there was nothing to show that any nervous influence contributed to the spastic or narrowed condition of his arteries. Oehler believes that the narrowing may well have been the final result of the violent alternate heatings and coolings to which the man's arms had been exposed for eight years by his work—which consisted in removing mosaic plates from hot ovens in which they had just been fired. A number of references to the literature are given: all treatment seems to have been ineffectual. A. J. Jex-Blake.

On Polycythæmia.

Lommel (F.). *Deutsches Arch. f. klin. Med.*, Leipzig, 1907, 92, p. 81.

In a previous article (*ibidem*, 1906, 87, p. 315) the author considered various points in connexion with this disease; he now

details another case, and discusses the ætiology of the condition. The patient, a slater of 47, was observed to have a very dark-red complexion in 1906; he had 9·7 million red cells per cbc.mm. of blood, and 150 per cent. of hæmoglobin. In July, 1907, he was cherry-red, with cyanotic lips, and congested superficial veins; the heart was a little enlarged, the arteries were sclerotic, and the pulse varied from 100 to 120; the blood-pressure was normal. Signs of bronchitis were present, and the finger-ends were "drumstick." The liver was enlarged and palpable; the spleen, palpable in 1906, could not be felt, and by percussion seemed normal in size. The urine was free from albumin and sugar, the nervous system was normal. The blood count gave 10,200,000 red cells, 5,300 white (19·3 per cent. of eosinophiles, 3·7 per cent. of lymphocytes, 71·8 per cent. of polymorphonuclear cells), and the quantity of hæmoglobin 22·4 per cent.—so that the colour-index was low. The oxygen-capacity, measured by F. Müller's ferricyanide method, gave the result O/Hb = 1·01; the normal value is given as = 1·34 by Hufner. The viscosity of the blood was 11·2, the normal being about 5 (Hirsch and Beck's method). In three experiments it was found that the O_2-consumption per kilogramme per minute was 4·42 c.cm., the CO_2-output 3·23 c.cm. The daily output of urobilin in the urine and fæces was 325 mgr., as contrasted with the normal 100 to 200 mgr., and Lommel holds that this proves an abnormally large destruction of red blood-cells: the consumption of O_2 and output of CO_2 were both high, though measured 14–15 hours after the last meal; the patient weighed 58·5 kilogrammes. After discussing the general causation of such cases of polycythæmia, Lommel concludes that it depends primarily upon a diminution in the O_2-capacity of the hæmoglobin; in a previously recorded case he found the value O/Hb = 0·89, and other observers have recorded similarly low values. The hæmoglobin being thus of inferior quality, compensation is effected by increase in the quantity of the hæmoglobin and the red cells. In the polycythæmia of congenital heart disease, the diminution of the O_2-capacity of the hæmoglobin is secondary to the difficulty in the aeration of the blood in the lungs.

A. J. Jex-Blake.

Scleroses of the Pancreas.

Chabrol (M. Etienne). *Gazette des Hôpitaux*, April 20 and 29, 1907.

Etiology.

Micro-organisms or toxins may reach the pancreas by the blood, by the lymph, directly by continuity, or by the ducts. The more important causes are classified as follows:—

1. By the blood. *Infections*: Acute specific fevers, as small-pox, typhoid, pneumonia. Sclerosis is little marked, however, as

the main action is on the parenchyma. *Toxins*: (i.) Exogenous, *e.g.*, alcohol; (ii.) endogenous, *e.g.*, in uræmia, diabetes.

2. By the lymphatics. Syphilis, tuberculosis and malaria may all cause sclerosis of the pancreas.

3. By continuity. Direct extension may occur from tuberculous masses, from perigastritis around a pyloric tumour, or from inflammations of the bile duct, usually in association with gall-stones. It is sometimes difficult to say whether a sclerosis of the pancreas arises from direct extension by continuity or via the excretory ducts, but where the sclerosis is limited to that portion of the pancreas traversed by the bile duct the inference is that it is due to direct extension.

4. By the pancreatic duct. Infection may take place in two ways—(i.) by ascent of infected bile along the duct, *e.g.*, a gall-stone is impacted in the ampulla of Vater; (ii.) by infection of the duct from the duodenum.

Speaking generally, we may say that the most important cause of pancreatic sclerosis is "auto-infection."

Pathological Anatomy.

A. *Macroscopic.* Two states occur, corresponding frequently to two stages in evolution—(1) hypertrophy, an earlier stage; (2) atrophic cirrhosis, a later stage.

B. *Microscopic.* The appearances are those of a sclerosis formed of embryonic or adult tissue having a varying distribution around the canals and being accompanied later by lesions in the glandular tissue proper or in the islands of Langerhans. Opinion differs as to whether the adult tissue is merely a sequela of the embryonic or whether the two forms are different in causation and in pathological characters. The changes in the islands of Langerhans are looked on by some observers as having a very definite relationship to diabetes, but others have noted similar changes occurring in non-diabetics and absence of changes in diabetics. In tuberculous and syphilitic scleroses the appearances characteristic of these granulomata are met with.

Bacteriology.

Tubercle bacillus is rarely found, Schaudinn's spirochæte has never been demonstrated, but typhoid bacillus, bacterium coli, pneumococcus and streptococcus have all been described.

Symptomatology.

This is often obscure, and many cases are only recognised at the autopsy. In other cases acute abdominal symptoms, such as pain, bilious vomiting, rise of temperature may mark the onset, but more usually the early symptoms manifest themselves gradually in the form of gastro-intestinal pain, loss of appetite, dilatation of the stomach, alternating constipation and diarrhœa. The more characteristic symptoms may be classified under the following groups:—

1. *Symptoms due to Compression*: (*a*) Obstructive jaundice. Jaundice may be entirely absent, as, for instance, where the bile duct does not traverse the gland. (*b*) Enlargement of the gall-bladder may or may not be present. It is of little value in diagnosis. (*c*) Hepatic enlargement may occur to a slight extent. (*d*) Pain may be due to pressure on the solar plexus or to irritation of the neighbouring peritoneum. It is usually epigastric, diffuse, deep, accompanied by vomiting, and shows a special tendency to be referred to the left shoulder. Its point of maximum intensity is fixed at the "pancreatic point," situated 5 to 7 cm. from the umbilicus on a line going to the summit of the right axilla. (*e*) Rarer symptoms are due to compression of the duodenum or of the splenic veins.

2. *Signs due to Tumour Mass.* In rare cases of hypertrophic sclerosis palpation under anæsthesia may reveal, when the genu-pectoral position is assumed, a tumour mass crossing the aorta just above the umbilicus.

3. *Symptoms due to interference with the Pancreatic Secretions.* (a) *External secretion.* Absence of this may reveal itself as follows: (1) Dyspepsia—vomiting and diarrhœa; (2) administration of salol is not followed by a reaction when perchloride of iron is added to the urine, owing to the fact that the salt is no longer split up in the intestine; (3) increase of fats, especially neutral fats in the fæces; (4) presence of undigested, striated muscular fibres in the fæces. (b) *Internal secretion.* Modifications of this secretion may cause the following important symptoms, though it must be remembered that at an early stage they are not usually absent: (1) Signs of diabetes, glycosuria and polyuria; (2) excessive excretion of lime salts, especially calcium oxalates (according to Mayo-Robson this explains the tendency to hæmorrhage met with in pancreatic disease); (3) Cammidge's reaction in the urine (many observers doubt the value of this reaction).

4. *General Symptoms.* (1) Rapid loss of weight with cachexia; (2) decrease of hæmoglobin and of red cells in the blood; (3) tendency to hæmorrhages under the skin and from the mucous membranes.

Course and Termination.

Two stages may be noted. In the first stage the course of the secretions is interfered with mechanically, as evidenced by jaundice and fats in the stools. In the later stage when the islands of Langerhans are affected, albumen and sugar appear in the urine and rapid wasting takes place.

Complications.

Hæmorrhage, septic infection of the bile ducts, malignant jaundice, pyelophlebitis, hæmorrhagic pancreatitis or the onset of malignant disease of the pancreas may cause death.

Varieties.

A " surgical type " may be recognised where the striking symptoms are intense jaundice, painful tumour and rapid loss of weight. The " medical type " comprises those cases where glycosuria is a marked symptom, and frequently the liver is enlarged and painful. Some of these cases fall under the head of bronzed diabetes, others are classified as examples of hypertrophic alcoholic cirrhosis.

Diagnosis.

The two conditons that present the chief difficulties in differential diagnosis are gall-stones and cancer of the pancreas. The former condition is distinguished by the history of onset, the seat of the pain, the irregular way in which jaundice developes, absence of changes in the fæces, and the frequent occurrence of pyrexia. Where sclerosis complicates gall-stones the condition may be recognised by the radiation of pain towards the left shoulder, Cammidge's reaction, glycosuria, rapid wasting and, most important of all, enormous amount of neutral fat present in the fæces. Cancer of the pancreas is characterised by a progressive jaundice, marked dilatation of the gall-bladder, rapid cachexia in five or six months without notable alterations in the shape of the liver. The age of the patient, the absence of preceding infections, the rarity of pain are points in favour of cancer.

E. N. Cunliffe.

Pneumonia by Contagion.

Azema (M.). *Gaz. des Hôp.*, 1907, p. 769.

Three cases of pneumonia of a grave type were contracted successively in the same room. It is unlikely that it could be explained by mere coincidence, and several other cases are quoted by the author either occurring in his own practice or recorded in literature. In all the cases an extremely short incubation period of two or three days at most was observed. A point of interest as regards one of M. Azéma's patients was that no physical signs were observed till the sixth day, evidently because the pneumonic process started centrally and took some time to reach the periphery. Although cases of pneumonia by contagion are rare it is important to treat the disease of one of an infectious character. The patient should be isolated and the attendants should observe antiseptic precautions as regards their clothing, hands and mouth. Particular attention should be paid to the disinfection of the sputum.

E. N. Cunliffe.

Etiology and Pathogenesis of Raynaud's Disease or Symmetrical Gangrene of the Extremities.

SARVONAT (F.). *Gaz. des Hôp.*, 1907, p. 771.

RAYNAUD, in 1862, described a number of symptoms which he regarded as a clinical entity. Later it was recognised that these symptoms occurred frequently with some other concomitant or preexisting malady, and the term 'Raynaud's disease' would be better replaced by 'Raynaud's syndrome.' It was recognised that the etiology of this condition is extensive and the pathogenesis obscure.

Etiology.

General Considerations. (*a*) Age. Any from 6 months to 76 years, but disease rarely starts after 15. (*b*) Sex. Females four times as frequently as males. (*c*) Occupation is operative only in so far as it leads to exposure to frequent variations of temperature and to cold water. (*d*) Heredity plays its part either in causing a direct tendency to Raynaud's disease or simply a neuropathic heritage.

Nervous Affections. Hysteria is a frequent concomitant and some cases have been cured by suggestion. Neurasthenia rarely, chorea, migraine, epilepsy, mental troubles (acute mania, dementia, melancholia) all have been noted. Organic nervous affections have been observed, the more important being syringomyelia, disseminated sclerosis, peripheral neuritis and hemiplegia. Particular interest attaches to cases of neuritis. Affleck affirmed that lesions of the plantar nerve occurred and that no changes were found in the vessels. Other observers have noted vascular changes which were concomitant if not preceding. Bury and Ross noted 7 cases of peripheral neuritis which were accompanied by Raynaud's syndrome but did not think it justifiable to assume the dependence of Raynaud's disease on neuritis. Scleroderma apparently occupies a place in the etiology of Raynaud's disease, intermediate between nervous and vascular affections. Numerous cases are on record proving the intimate relationship between the two diseases and some authorities have characterised them as different results of endarteritis. Another disease closely related to Raynaud's is erythromelalgia.

Vascular Affections. Arterio-sclerosis either generalised or localised to the great vessels or the peripheral branches has been frequently noted, but the vessels remain permeable. Lesions of the heart (apart from the sequlæ of nephritis) occur less frequently.

Renal Affections. Acute or chronic nephritis, albuminuria and hæmoglobinuria occur too frequently to allow of any doubt to exist as to some association between these conditions and Raynaud's disease. In the case of hæmoglobinuria the associa-

tion must be an intimate one since both affections have numerous points in common: dependence on cold and malaria, sex frequency, paroxysmal nature, occasional presence of a slight jaundice, and where both occur together a striking balance is observed in their varying intensity.

Intoxications. (*a*) *Exogenous:* Lead and benzene. (*b*) *Endogenous:* Diabetes, perhaps renal disease.

Infections. (*a*) *Acute:* Typhoid, small pox, scarlet fever, measles, influenza, rheumatic fever. (*b*) *Chronic:* Syphilis, tubercle, malaria. The most important is the latter, for there seems no doubt that a malarial history is present in many of the cases and that improvement occurs when quinine is administered.

Pathogenesis.

The vascular changes are probably secondary. All the evidence seems to favour the idea that the cause of the disease is a spasm of the vessels and the symmetrical character of the lesions, their periodicity, their response to therapeutic measures that act on nerve tissues all point to the cause lying in the nervous system. The trouble is probably a functional one and the changes observed occasionally in the peripheral nerves are secondary. The association with nephritis is explained by assuming that they are both the results of the same toxin causing vasoconstriction. In the one case it selects the kidney vessels, in the other the peripheral ones. A variety of toxins are known to cause vasoconstriction, for instance, suprarenal or renal extract, bile salts, urea, neurine; and the part played by the chronic infections and by diabetes may be thus explained. Raynaud's syndrome may then be attributed to abnormal vasomotor reactions provoked by cold in certain individuals predisposed thereto either by the state of their nervous system or of their vessels.

E. N. Cunliffe.

Enteric Fever with feeble or absent Widal's Reaction.

Hoesslin (H. von). *Deutsches Arch. f. klin. Med.*, Leipzig, 1907, 91, p. 314.

The author remarks that a certain number of cases of enteric fever have constantly been recorded in which Widal's reaction was negative, quite apart from cases of paratyphoid or similar infections. In 1906 Brion and Kayser recorded such a case, and attributed it to the fact that inoculation of animals with these two microbes simultaneously, shewed that the development of Widal's reaction might be retarded or altogether absent under these circumstances. Von Hoesslin details two obvious cases of enteric fever in which B. typhosus was isolated from the circu-

lating blood, but which gave no Widal reaction during the 5 or 10 months respectively they were kept under observation after the onset of the disease. In each, several stocks of B. typhosus and B. paratyphosus were employed in testing for the Widal reaction, including the B. typhosus grown from the patient's own blood, but without success. Two other cases are recorded in which the clinical picture was clearly that of enteric fever, though no evidence at all of infection with B. typhosus or any allied microbe could be found. He discusses the various reasons that have been advanced to explain the occurrence of enteric fever without Widal's reaction, but finds none of them satisfactory.

A. J. Jex-Blake.

Experiments on the Etiology of Diabetes Insipidus.

Finkelnburg (R.). *Deutsches Arch. f. klin. Med.*, Leipzig, 1907, 91, p. 345.

The question whether diabetes insipidus depends primarily upon polydipsia or upon polyuria has been answered differently by different observers. In some cases the kidneys appear unable to excrete urine of more than a certain concentration, so that addition of nitrogenous food or of NaCl to the diet immediately augments the volume (but not the concentration) of the urine. Meyer has described these as the cases of true diabetes insipidus, referable to some secretory anomaly in the kidneys; so that polyuria is the primary cause here. Other patients with diabetes insipidus have no such renal disability, but answer to a dose of *e.g.*, 25 grms. of NaCl by an increased concentration of the urine—just as a normal person would; in them the disorder depends primarily upon polydipsia, and if this can be controlled (by a powerful mental impression, for example) the excretion of urine lessens at once.

Finkelnburg has experimented upon 3 patients with diabetes insipidus. The first, a youth of 19 with cerebellar tumour, developed the diabetes a day or two after trephining and puncture of the cerebellum and lateral ventricle had been performed; the cerebral symptoms were greatly relieved, but polyuria (5 to 7 litres a day) set in and lasted till death 8 months later. The urine lessened much on a diet poor in N and NaCl, and vice versa; the molecular concentration of the urine remained strikingly constant, whatever the diet, though increase in the NaCl taken did cause an unusually small rise in the percentage of NaCl in the urine; to theocin (a diuretic) the patient reacted like a normal person. The second patient, a countryman of 24, presented no abnormality beyond polyuria, with a 4 months history; on an ordinary mixed diet he excreted 14 to 18 litres of urine a day. The amount of urine depended mainly upon the nature of his food, lessening on a diet poor in N and in NaCl, its molecular concentration remaining tolerably constant

when the diet varied. Increase in the NaCl of the diet augmented the polyuria, the percentage of NaCl in the urine not changing; addition of Na_2HPO_4 (20 grams) to the diet did not increase the volume of urine passed, but did raise the percentage of phosphate. The patient reacted like a normal person to theocin. The third patient, a man of 30 who may or may not have had syphilis, gave a history of polyuria (up to 5 litres a day) of 5 weeks' standing. It was found that the addition of 25 grms. of NaCl to his diet did not increase the volume of his urine, but did augment the percentage of NaCl in it two- or three-fold—just as it would in a normal person; next day, however, the volume of the urine was increased, and not the percentage of NaCl; hence the NaCl was eliminated unusually slowly. On a diet poor in N and NaCl the volume of his urine diminished. Finkelnburg is therefore uncertain whether this patient suffered from primary polydipsia, or from true diabetes insipidus. He thinks that there must be at least two classes of this diabetes: (1) those in whom the kidneys cannot excrete urine of more than a certain concentration, and (2) those in whom the condition depends upon some lesion in the central nervous system. He has experimented also upon rabbits, puncturing the cerebellum and medulla and injecting a drop or so of $AgNO_3$ solution: in 6 out of 16 cases he produced true polyuria, and found that in these cases the excreting powers of the kidneys were not impaired. He argues that the polyuria, presumably of nervous origin, is the primary defect here, the thirst and increased input of water being secondary thereto.

A. J. Jex-Blake.

The Kidneys in Hæmoglobinuria.

Schmidt (J. E.). *Deutsches Arch. f. klin. Med.*, Leipzig, 1907, 91, p. 225.

The view that the renal excretion of hæmoglobin acts detrimentally upon the kidneys is very commonly held; far-reaching necrosis of the epithelium of the convoluted tubes has even been described as a consequence of hæmoglobinæmia. Schmidt has injected the centrifugalised plasma of rabbits' blood laked by repeated freezing and thawing, into the veins of other rabbits all under aseptic precautions; such a plasma has the advantages that it is free from solid cellular particles, and that it contains other extractives from the laked red corpuscles besides their hæmoglobin. He finds that this plasma does not produce any intravascular thrombosis, and causes no hæmolysis; in the kidney it gives rise to no inflammation, and causes no necrosis or degeneration of the renal epithelium. After repeated intravenous injections of this hæmoglobin plasma a few renal epithelial cells desquamate, possibly in consequence of the strain put upon them

by the difficult excretion of the hæmoglobin. And a slight interference with the excretion by the kidneys does occur, as shown by the formation of tube-casts and by slight diapedesis of red cells into the kidney substance; and a further functional interference—some degree of anuria—may also follow; Schmidt, however, is inclined to ascribe these to the injected potassium salts rather than to the hæmoglobin.

A. J. Jex-Blake.

Jaundice due to Maretine.

Percival (A. L.). *Riv. crit. di Clin. med.*, Florence, 1907, viii., p. 735.

Maretine is an acid carbamate of metatolylhydrazide, and was introduced as an antipyretic in 1904. Since then its action has been praised by a number of authors, regarded with disfavour by others. It is a white crystalline powder, insipid, melting at 183°C., not readily soluble in water or alcohol. It is a powerful antipyretic, in doses of from 1 to 8 grains, acting in about an hour, and keeping the temperature down for from 6 to 24 hours. Percival has seen jaundice follow its exhibition in 6 out of 30 cases in which he has used the drug, and gives details of 3 of these. The first, a woman of 29, with enteric fever, took 11 doses each of 4 grains of maretine, given once or twice a day, and exhibited a moderate degree of jaundice; the urine was albuminous (as it was before the maretine was used) and contained excess of urobilin, but no bile pigment, and after about a week the jaundice disappeared. A second patient, of 18 with enteric fever, was given 65 grains of maretine in the course of four days, when jaundice appeared and lasted for a few days; the fæces remained normal in colour, the urine contained a trace of albumin and much urobilin. The third patient, a child of 10, with enteric fever, developed jaundice and urticaria after taking a few 4 grain doses of maretine. Percival believes that this child had hæmoglobinæmia and hæmoglobinuria in consequence of the use of maretine, and quotes an analogous case of Krönig's, in which hydrobilirubin and crystals of hæmatoidin were found in the urine of a patient with rheumatic fever, who had taken 8 grains of maretine daily for 16 successive days and developed jaundice. Percival concludes that maretine has a definite hæmolytic action on the blood, and is not an ideal antipyretic.

A. J. Jex-Blake.

Acute Colitis and Ulcerative Colitis.

Phillips (S.). *British Medical Journal*, June 8th, 1907.

Without pretending to completeness, the account given is a valuable resumé of the clinical features of acute colitis. Of

the cases described some were of the severe fatal ulcerative type, while others recovered more or less completely after attacks of varying severity and duration. A clinical classification of the varieties of acute colitis is not yet possible; some cases appear to run a definite course of about three weeks ending in recovery, though relapse may occur, some are rapidly fatal from exhaustion, while others run a most protracted course with evidences of recurring inflammation, and may terminate fatally after many months from asthenia or complications.

The onset is variable and may resemble that of influenza or variola, in others abdominal symptoms are present from the first, while others set in gradually with headache, diarrhœa and pyrexia so as to simulate typhoid. Notable features are the clean tongue, the preservation of appetite and gastric digestion and the singular immunity of the circulatory and respiratory organs. Pain is a variable symptom and may be absent throughout an intense and even fatal ulcerative colitis. Melaena may appear early and certainly before ulceration has occurred, but may be absent. Hiccough is almost characteristic of ulcerative colitis, and leucocytosis was observed so frequently that the writer regards it as a feature of the disease. An intermittent type of fever has been noted in many cases. He believes there is no definite dividing line between acute colitis with and without ulceration, and that ulceration is not a necessary part of the disease. In treatment he emphasises the value of mercury as an intestinal antiseptic and thinks it to some extent controls the disease. He lays rather less stress upon the use of enemata which may be unsuitable in some cases by causing pain. As regards surgical measures he is not enthusiastic. In one of his cases death from hæmorrhage was perhaps averted by opening the cæcum, but in others this procedure has failed to arrest the disease or to prevent a relapse occurring even while the cæcostomy was still open.

G. R. Mill.

Non-malignant Duodenal Ulcer.

D'Arcy Power. *Medical Press*, May 15, 1907.

The writer believes that there is no pathognomonic sign of ulcer of the duodenum while ulceration is in progress. Exact differentiation from gastric ulcer, however, is of no practical importance, since in the majority of cases the patient recovers from the attack of hæmorrhage, or, if the bleeding be sufficient to call for an exploration, the surgeon performs gastro-jejunostomy, whether the ulcer is in the stomach or the duodenum. He would thus seem to reserve gastro-jejunostomy as a primary procedure, for cases of severe hæmorrhage or of duodenal obstruction, whereas, according to the decided opinion of

Mayo Robson gastro-jejunostomy is the proper treatment for duodenal ulcer quite apart from complications. In perforation the signs may be misleading, especially when peritonitis has extended downwards on the right side so as to simulate appendicitis. Early diagnosis is therefore important; morphia should be withheld, and the pulse-rate noted every half-hour. After the fluid has gained access to the peritoneal recesses the condition at operation becomes still more desperate. In the diagnosis of duodenal constriction the past history should be carefully investigated, the gums examined to exclude lead-poisoning, and a test-meal given. In simple stenosis free hydrochloric acid is as a rule present and the Oppler-Boas bacillus absent. Operation should not be delayed, for if the case should prove to be malignant early operation may permit of radical measures, while even if the disease cannot be removed gastro-jejunostomy may give relief and prolong life.

G. R. Mill.

Some possible Etiological Factors in the Recurrent Vomiting of Children.

Howland (J.) and Richards (A. N.). *Archives of Pediatrics*, 1907. No. 6.

The writers have endeavoured to throw some light upon the metabolic disturbances associated with the recurrent vomiting of children as evidenced by the abnormal urinary constituents present during the attacks. Their clinical observations confirmed the presence of acetone, diacetic acid and B. oxybutyric acid, as also of the increased uric acid excretion already noted by other observers. In addition they found the sulphuric acid diminished while the unoxidised sulphur was increased. Lactic acid was also found in the only case in which the urine was tested for this substance. There was a marked increase of indican before and during the early days of the attack, sometimes persisting after recovery. As regards the significance of these urinary changes, B. oxybutyric and diacetic acids are believed to be intermediate products of the combustion of fats, and the writers formed the opinion that in these cases the incomplete combustion of fats was probably due to diminished power of oxidation on the part of the body cells, rather than to lessened sugar combustion from carbohydrate starvation. This seemed to be supported by the increase of endogenous uric acid in the absence of any increase of total nitrogen, by an increase of unoxidised sulphur at the expense of sulphuric acid, and especially by the appearance of lactic acid, an intermediate product of the combustion of dextrose and a decidedly abnormal constituent of the urine.

Their experimental investigations were directed to determining whether a relation existed between the indicanuria and

the diminished oxidation as evidenced by the abnormal urinary constituents. Indol is ordinarily non-toxic, being readily oxidised by the organism. Their experiments showed however that when oxidation is diminished by the injection of small amounts of KCN or by chloroform anæsthesia, previous to and along with the introduction of indol, certain toxic symptoms result which must be attributed to the indol, and, amongst these, gastro-intestinal symptoms were prominent. The symptoms produced in animals were not identical with those in children owing probably to the different conditions in which the diminished oxidation is brought about in the two cases.

The writers think it may be assumed that in children with recurrent vomiting indol is present in comparatively large amounts, but they do not claim that this and the other aromatic substances are alone the cause of the attacks. They believe these substances are eliminated by the stomach, and a trace of indol was found in the vomit in one case though the vomit was clear and not bile-stained. They suggest that a shock, fright, etc., acting upon an unstable nervous system results in some unknown way in a diminished power of oxidation and the organism loses the power of detoxifying substances absorbed from the intestine, which, failing to be excreted by the kidneys, circulate as poisons in the blood, being excreted and re-absorbed by the stomach, till the power to oxidise and detoxify them is restored.

G. R. Mill.

Addison's Disease in Children.

Felberbaum and Fruchthandler. *New York Med. Journ.*, August 10, 1907.

Before puberty this disease is extremely rare, and presents considerable differences from that occurring later. The writers' case was a girl of 12, with a tuberculous family history. The illness began six months previously with abdominal distress and attacks of weakness, during which she was prostrated and somnolent. There was occasional vomiting. About four months later pigmentation of the skin appeared. There had been no syncopal attacks and no convulsions. On examination, marked pigmentation of skin and buccal mucous membrane. The scalp swarmed with pediculi, and the hair was of a muddy colour in streaks and felt like oakum. Vagabondism was therefore carefully excluded. The abdomen was very rigid. On casual observation she appeared quite normal except for some apathy. Latterly the disposition altered, becoming restless and irritable; appetite was lost, and she complained of cramps. The end came with little or no warning in the form of severe convulsions lasting about eight hours. After death numerous small oval masses

were felt in the abdomen resembling enlarged retroperitoneal glands. No autopsy was permitted.

Blood. An average of three counts showed :

Neutrophiles.	Eosinophiles.	Small L.	Large L.	Large M.L.
67	12	7	8	6

On account of the eosinophilia the fæces were examined and showed numerous oval bodies about four times the size of a red blood corpuscle. The nature of these could not be determined.

The writers have collected and tabulated 25 cases, including the above, some of which they think doubtful. As regards the relative frequency in children, Monti found 6 under 13 years out of 200 cases, and Green 4 out of 330.

Age. The frequency increases towards puberty. The youngest case on record was 7 days.

Sex. In this series 12 were boys, 13 girls.

Family history. Tuberculosis in 4 cases. The possibility of heredity is suggested by the occurrence of the disease in a mother and four children.

Symptomatology. For practical purposes two groups may be recognised :—

1. *Typical form.* A slow course with pigmentations, gastro-intestinal symptoms (abdominal distress in attacks, diarrhœa or constipation, often alternating), prostration and increasing asthenia. Of this variety there were 15 cases, or 60 per cent.

2. *Atypical form.* All cases in which some of the pathognomonic symptoms are absent, or which present unusual features. Of these, 7 cases are classified as follows :—(1) Acute fulminating type simulating acute peritonitis ; (2) those with irregular course ; (3) doubtful cases; (4) in addition to these, 3 showed no symptoms, *i.e.*, were accidentally discovered at autopsy.

Pigmentation. This was the first symptom noticed in 9 cases. A peculiar condition of the hair was noted in the writers' and in another case, in which it had a peculiar dirty streaky appearance, as if stained with silver nitrate.

Gastro-intestinal symptoms. These are present in all typical cases, but in most instances surprisingly mild in character. Gastric or intestinal symptoms may precede the pigmentation.

General symptoms. In almost all there was general weakness, amounting in 11 of the 15 typical cases to prostration. The pulse is small, soft, feeble and somewhat accelerated. Temperature is usually normal, occasionally elevated or sub-normal. The blood and urine are as a rule normal.

Course and termination. In the typical form the disease may last from a few months to a few years; rarely it is rapid. Intermissions have been recorded. Death by convulsions is not infrequent; out of the 15 typical cases 7 died in convulsions. A peculiarity in children is the sudden fatal ending with very little premonition.

Diagnosis. Pigmentation of the skin may be due to phthisis, cancer, vagabondism, marasmus and congenital syphilis, as well as chronic itching skin diseases, such as prurigo. Pigmentation of mucous membranes alone is not conclusive, especially if confined to the lips, while even in the mucous membrane of the buccal cavity it may, according to Eichhorst and others, be found in health.

Morbid anatomy. The writers call attention to the fact that along with tuberculosis of the adrenals the mesenteric glands are often found diseased, which, they think, may be of some significance as pointing to the intestine as a source of infection.

Autopsies were made in 17 cases; 16 showed pathological changes, while 1, a typical case, was without demonstrable change in adrenals or semilunar ganglion. The lesions in the adrenals were: tuberculosis, 10; cancer, 2; cystic degeneration, 1; absence of one with sclerosis of the other, 1; sclerotic atrophy, 1; abnormal but no definite statement, 1.

Associated lesions were found in 12 cases: pulmonary tuberculosis, 3; tuberculosis of mesenteric glands, 6; renal tuberculosis with secondary involvement of the adrenals, 2; tuberculosis of the spine with secondary adrenal involvement, 1.

G. R. Mill.

The Etiology of Intussusception.

Hipsley (P. L.). *Australasian Med. Gaz.*, July 20th, 1907.

The writer suggests as a factor in the above an enlargement of the Peyer's patches and solitary glands. He found this very marked after death in two cases; the hypertrophy was most marked in the terminal portion of the ileum and seemed to be out of all proportion to the congestion of the bowel wall. He finds support for his idea in the fact that intussusception is more common in the lower ileum than in the jejunum or right upper ileum, and in the statement of Corner that enteric intussusception has oftenest a lateral, not a circular, origin, and that the invagination generally commences opposite the mesenteric attachment. Further it is most common at that period of life when adenoid tissue occurs in the bowel in greatest quantity and when, according to Osler, Peyer's patches become swollen from slight causes.

Some part may also be played by the comparative thinness of the bowel wall, the relatively long mesentery and the increased calibre of the ileum in its terminal part. In the case of the colon, intussusception begins most commonly where lymphoid tissue is most abundant, namely at the cæcal apex; but some other factor must be at work, such as the very unequal calibre of the colon in infants, the mobility of the caput coli, and the occurrence of antiperistalsis.

G. R. Mill.

The Diagnosis and Treatment of Stone in the common Bile Duct.

Borelius. *Norsk Mag. f. Laegevidenskaben,* Christiania, 1907, p. 1122.

Prof. Borelius' operative statistics include 176 cases:—Cholecystectomy, 106 cases, 3 deaths; cholecystostomy, 30 cases, 1 death; choledochotomy, 30 cases, 6 deaths; atypical operations, 10 cases, with 4 deaths. The stones are often difficult to feel, so that the ducts may have to be opened and inspected. The chief diagnostic points are—(1) definite symptoms of gall-stone colic, with a history of some duration; (2) recurrence of the attacks soon after one another; (3) intermittent fever, due to bile-duct inflammation; (4) chronic icterus, present in 174 of Borelius' cases, marked, lasting, and with considerable successive variations in degree. Diagnosis from malignant growths of the pancreas and from stone in the gall-bladder may be difficult. Operation in cases of stone in the bile-passages should always be performed, and without delay—jaundice is no contra-indication. Rovsing has several times performed choledocholithotripsy with success; Borelius prefers in general, if he opens the bile-duct, to drain rather than to suture it, and to treat the cases according to the condition he finds at the operation.

A. J. Jex-Blake.

Surgery.

Sigmoiditis and Perisigmoiditis.

Patel (M.). *Revue de Chirurgie,* Oct. and Dec., 1907.

The whole length of the large intestine is liable to inflammatory disease, but owing to the specialized anatomy and physiology of its cæcal and sigmoid sections the inflammatory lesions of these sections are sufficiently pronounced in their features and sequelæ to be worthy of separate and detailed description.

Sigmoiditis and perisigmoiditis are definite diseases and are to be considered as such apart from the lesions of dysentery, tuberculosis, and syphilis. Moreover, these inflammations which occur above and about a simple or malignant stricture are secondary in character and are not included by the author in his paper.

Sigmoiditis and perisigmoiditis begins from within the intestine, and the disease so begun may remain limited to the sigmoid tunics or may extend to the adjacent cellular tissue.

The actual cause of the disease is unknown.

The predisposing causes appear to be chronic constipation, purgatives, worms, foreign bodies, and the hernial diverticula of the sigmoid sometimes seen in older subjects would appear to play a very important part in the disease, since the possibility of a diverticulitis in all respects analogous to an appendicitis must always be borne in mind.

Patel, in his account of the acute forms of the disease, differentiates acute non-suppurative sigmoiditis and acute suppurative perisigmoiditis.

In the former variety the disease begins acutely with pain in the left iliac fossa, some vomiting, an irregular raised temperature, slight muscular rigidity and constipation. Soon after the vomit there occur frequent motions of pus and blood, and the disease gradually subsides having lasted about eight days in an average case.

A distinctly indurated but movable sigmoid may be felt and may remain palpable for many weeks after the attack. Relapses are common.

In acute suppurative perisigmoiditis we have a disease which runs a clinical course identical with that of the more localized and chronic types of appendicular abscess. Variations in the anatomy of the sigmoid will determine the exact site of the purulent collection. Patel describes the chief forms which have been encountered. The author classifies the chronic types of the disease as:—

(1) Chronic sigmoiditis.
(2) Chronic perisigmoiditis.
(3) Subacute perisigmoiditis.
(4) Stricture of the Sigmoid.

Chronic sigmoiditis is not uncommon and usually part of a more generalized colitis. The mucous membrane is thickened and may become polypoid or the seat of adenomatous outgrowth.

Chronic perisigmoiditis is usually the residuum of previous acute attacks. The disease is essentially a progressive plastic disease, and may give rise to definite cicatricial bands, firm matting, chronic œdema of the mesocolon and multiple diverticula. Ultimately some of these cases lead to much hypertrophy of the gut and terminate in definite stricture.

The imitation of cancerous stricture is in these cases very complete, and affords the explanation of the excellent results which have in many cases followed on surgical intervention in the case of supposed malignant disease of the sigmoid. It is likely that certain of these cases are of tuberculous origin.

Lastly, there occur from time to time, instances of sigmoiditis with generalized peritonitis. These cases have usually been seen in elderly patients in whom the peritonitis is of a markedly asthenic nature. There does not appear to exist a sudden gangrenous perforative lesion of the sigmoid analogous to the gangrene so common in the appendix, but these cases of peritonitis probably arise from the perforation of an inflamed diverticulum.

Treatment is in an unsatisfactory condition. In the milder cases opium internally and ice locally have given the best results. In the abscess cases laparotomy with drainage is essential. In the chronic hypertrophic and stenosing forms excision, colostomy, and anastomosis have each been employed.

E. D. Telford.

Multiple Carcinomata following Chronic X-ray Dermatitis.

Porter (C. A.) and White (C. J.). *Annals of Surg.*, 1907, vol. xlvi., p. 649.

This is a case of multiple carcinomata occurring in the hands of an X-ray operator, a young man who first began X-ray work in 1896. He had been exposed for several hours a day, at a short distance, to a low vacuum tube. Dermatitis occurred eight months later, and despite that 1 % orthoform ointment had to be used almost continuously to relieve pain, work was continued for another five months. Chronic ulceration next developed and refused to heal. Skin grafting was then resorted to, and most of the grafts adhered satisfactorily and pain was relieved. Although X-ray work was stopped for a year ulcers

developed on the fingers, and repeated excision and grafting had to be performed before healing was obtained. Some ulcers on the ends of both ring fingers and on the little finger of the right hand persisted in spite of six or seven operations, and a histological examination made in October, 1902, shewed evidence of carcinoma.

Amputation of both ring fingers was performed, followed by numerous other operations—amputations of whole or part of fingers or of ulcerated or keratotic areas, and the patient's condition was much improved for a time. Unfortunately, however, ulceration returned, with further developments of carcinoma and necessity for radical treatment. Altogether 10 different epitheliomas formed on the two hands in the course of five years, and some 25 operations under ether were performed during 10 years. The patient is still under treatment.

A very careful pathological report is given of the histological appearances in the tissues removed, almost every known phase of epidermic deviation was encountered, from simple ulceration and benign keratosis to acute epitheliomatous proliferation. There were no pigmentary changes.

A search through the literature has resulted in the finding of records of eight cases, brief resumés of which are recounted. To these are added accounts of two cases communicated by Dr. L. L. McArthur, of Chicago, making, with the writer's case, a total of 11 cases, with a mortality, to date, of over 50 %. From a study of all these cases the following conclusions are drawn :—

(1) For the atrophic condition of the skin and the telangeiectasis nothing can be done.

(2) Hypertrophic changes, keratoses and warts may with safety be treated in the usual manner. If such treatment fails, excision with or without skin grafting will probably relieve the pain and result in cure.

(3) Excision and grafting will prove to be the best treatment for recurrent fissures.

(4) All ulcerations, which, under ordinary treatment, remain open, after three months, should be thoroughly excised, and very carefully examined. The subsequent treatment, depending upon the result of the microscopic examination, should be skin grafting, with or without excision or amputation.

(5) As the history of almost all of these cases of severe and chronic dermatitis dates back to early exposures, with the protection which our present knowledge affords it is to be hoped the number of victims will steadily diminish.

(6) Meanwhile, early excision of all persistent X-ray ulcerations should be recommended in order that subsequent malignant degeneration may be prevented.

P. R. Cooper.

Radical Treatment of Sliding Hernia.

FIASCHI (T.). *Australian Medical Gazette,* Nov. 20, 1907.

BY the expression "sliding" the author indicates those herniæ, usually inguinal, in which the cæcum, pelvic colon, rectum or bladder actually form a part of the wall and are only partially covered by peritoneum.

Such has been found to be the case in 66 % of cæcal herniæ by Bull and Colley.

Fiaschi thinks they are commoner than usually supposed and constitute a relatively large percentage of relapses after operation.

The condition is akin to prolapse and to meet this it occurred to him to apply Lenormant's operation of colopexy, hitherto used only for rectal prolapse.

For example, in dealing with a cæcal hernia of this kind, the usual Bassini operation was performed, the sac over the colon being left on the viscus which was pushed back into the abdomen. A small Mac Burney's incision was then made, the prolapsed viscus identified and a strip of peritoneum excised from the right iliac fossa; to the bare surface thus exposed, the cæcum is united by cat-gut sutures and the wound closed.

LAWRENCE JONES.

The Causes and Varieties of Urethral Stricture.

EDMUNDS (A.). *The Practitioner,* January, 1908, p. 35.

FOLLOWING the usual classification, the author divides strictures into temporary obstructions caused by spasm or congestion and those more permanent and organic: but he points out that these causes may be present together.

A congestive stricture such as caused by gonorrhœa never alone gives rise to complete obstruction, spasm due to pain being always present. The spasm is due to the action of the unstriped muscle fibres near the neck of the bladder, and not of the striped fibres of the compressor urethræ; and the same nerve which innervates the muscle is found, on stimulation, to inhibit the bladder muscle and so in spasmodic stricture, both factors are at work in producing retention.

The amount of narrowing which follows an injury of the urethra depends on the separation of the edges of the wound, the extent of urinary extravasation and the condition of the urine—a longitudinal cut as made by a surgeon, with subsequent suturing of the urethra never leads to a stricture, nor do the more superficial injuries of only the mucous membrane, such as are caused by the passage of a calculus.

The author does not think that a single attack of gonorrhœa often results in a stricture, and he thinks the personal factor is an

important element. Just as some people are more likely to show a scar after an operation than others.

Congenital stricture is also dealt with, and the importance of a narrow meatus is emphasized.

LAWRENCE JONES.

The Treatment of Gonorrhœa.

PARDOE (J.). *The Practitioner*, 1908, p. 50.

CLINICALLY the division of the urethra into anterior and posterior portions is of the greatest importance. The urethra, as seen by the urethroscope in the first few hours of the attack shows the disease as a reddened engorged area in front of and sharply cut off from the normal healthy pink membrane.

The process rapidly spreads to the bulb where it may cease to extend, although in many cases it passes the compressor urethræ and so involves the posterior urethra.

If seen in the first few hours, the abortive treatment may be tried, but this is rarely practicable: to perform it, the urine must be passed and the anterior urethra washed out with sterilized saline, the fluid being prevented from passing beyond the peni-scrotal junction. The urethra is then anæsthetized, preferably with novocaine, and a strong solution of silver nitrate, 2 to 4 %, applied to the mucous membrane through the largest tube that can be passed. Any excess is mopped away and finally saline is injected to neutralize further action. The treatment is repeated every 48 hours, it is of no avail if there is a definite discharge.

If seen early, but when a free purulent discharge is present, the disease may yield to a modified abortive treatment, provided it is only in the anterior urethra.

This consists of free irrigations given twice a day from an irrigator, raised about four or five feet above the patient; the fluid used being a 1 in 5,000 solution of permanganate of potash increased to 1 in 1,000; about a quart is used at each sitting and the treatment continued for 10 days or so, when all discharge should have ceased.

If the disease is seen when well established, the author recommends the usual treatment, and is strongly opposed to any form of injection until all acute symptoms have subsided.

He has seen sufficient results follow the use of vaccine to warrant a more extended trial of this method.

LAWRENCE JONES.

A method of dealing with the Abdominal Wound in order to prevent Post-operative Hernia.

STEWART (J. M. Y.). *Australian Medical Gazette*, November 20th, 1907.

THE method described, which has proved very satisfactory in the hands of the author, is similar to the appendicectomy incision of

Mr. Battle, applied to the mid line. The skin is divided over the linea alba below the umbilicus, and its edge retracted so as to expose the sheath of the rectus, which is incised vertically about $\frac{3}{8}$ inch from the mid line; the muscle is then retracted outwards but not divided and the peritoneum is opened in the same line. Skin, peritoneum and sheath are closed by continuous separate sutures, the rectus falling back into its original position and safeguarding the wound.

LAWRENCE JONES.

Suprahyoid Pharyngotomy for Tumours at the Base of the Tongue.

FEDEROFF (S. P.). *Arch. für klin Chirurg,* Band 84, Heft. 3, p. 1135.

FEDEROFF reports the following case.

A woman, aged 21, had noticed a papillomatous swelling at the back of the tongue, for $1\frac{1}{2}$ months; it was about the size of a plum and interfered with breathing and swallowing. Under cocaine anæsthesia the tumour was removed with a galvano cautery loop; this was followed by furious bleeding, controlled with difficulty. There was a rapid recurrence of the growth, which was shown microscopically to be a papilloma. Accordingly a transverse incision of 8 cms. was made $\frac{1}{2}$ cm. above the hyoid bone, through which, after separating the muscles of the tongue and opening the pharynx, a good exposure was obtained of the parts; the growth was easily removed and the tongue sutured with cat-gut, the pharynx was also sutured, but gave some trouble in healing, leaving a fistula for a few weeks.

Judging from reported examples the operation is not of much danger.

LAWRENCE JONES.

Operative Treatment of Fractures involving the Elbow Joint.

FLINT (C. P.). *Medical Record,* September 21, 1907.

IN spite of success, one is forced by the analysis of clinical experience to conclude that open operation is not always indicated; in children particularly one must remember that a good functional joint and a useful limb frequently result after months of waiting when at the time of injury it did not seem possible to preserve even a part of the normal arc of motion.

An accurate knowledge of the epiphysis is important. By examining 54 elbows with the *x*-rays, the time of appearance of the nuclei and of their union seems to vary within two or three years, but, roughly, the dates given by Wilnis and Wendt may be taken as correct. It is most important to be able to recognise the correct relation of the normal nuclei as seen by the *x*-rays.

The synovial membrane reaches one inch above the coronoid fossa in front, but it stops at the upper limit of the olecranon fossa behind. The relation of the three main nerves to the joint should always be kept in mind. If possible any operation should be postponed until the effects of the injury are subsiding; immediate operations are far more likely to lead to infection.

There are two classes of injury which may demand operation—recent fractures and fractures of long standing; the former may require it because of interposed tissue, because it is impossible to hold the fragments in anything like a good position, because the fragment is sure to necrose and because there is an injury to a nerve; the latter demand operation when there is non-union when the arc of motion is limited and when there is a nerve injury. Operation for fracture of the olecranon is advisable when the fracture is at the base of the process or when there is marked separation of the fragments.

Flint does not approve of a wire suture as he thinks it tends to cause non-union. He deals in turn with the various fractures which may occur in this region, but on the whole is not strongly in favour of operative interference, at any rate in the majority of cases. LAWRENCE JONES.

Ptosis of the Abdominal Viscera.

CUMSTON (C. G.). *Medical Record,* October 19, 1907, p. 639. SUCH a condition is supposed by many to be due to hereditary weakness, although Glénard does not think this is a common cause. Traumatism is a frequent factor in a subject who is predisposed, but by itself is unable to give rise to gastroptosis. Most important is that disturbance of nutrition which allows fibrous tissue to stretch and give way under slight provocation, just as in the case of acquired herniæ. Pregnancy is probably not of so much importance as hitherto considered; thus Linder and Kuttner found nephroptosis in 64 nulliparæ, 20 primiparæ and 74 multiparæ.

The author also deals with other supposed causes, such as tight corsets, intra-abdominal tumours and so forth. Visceral ptoses are very rarely single. Surgical interference is only legitimate in those cases in which all other means have proved unsuccessful or in which the patient's life is rendered miserable by this condition.

Cumston operates as follows:—A vertical incision is made from the ensiform process to the pubes, the anterior rectus sheath is dissected off the rectus, the posterior aspect of the muscle exposed for about 2 cm. of its breadth, and its surfaces united by kangaroo tendons so as to overlap; the excess of anterior sheath is then cut away and the anterior sheath sutured in a similar manner. The cavity of the abdomen is thus

diminished in capacity; he has performed this operation seven times with good results. The fact that the peritoneum is not opened is in favour of this operation. LAWRENCE JONES.

Advanced Age as a Contra-indication to Operation.

SMITH (O. C.). *Medical Record, October* 19, 1907, p. 642.

FROM the operator's point of view, the age of the patient is not to be estimated by his years but by the condition of his heart, vessels, kidneys and lungs. Improved technique in recent years has quite altered the extent of the risk in aged subjects. They do not stand an extensive loss of blood as well as younger patients, their tissues are less resistant to injury and ideal asepsis is more difficult to obtain; these three facts should always be kept in view.

The author is in favour of local anæsthesia in certain cases, but is not satisfied with the results of spinal injections; he strongly advocates the use of ether by the open method as the routine method. Every means should be taken to diminish the extent of shock; if it does occur reliance may be placed on adrenalin, aseptic ergot, saline solution given hypodermically or by the rectum and direct transfusion of blood; strychnine seems to be of value in spite of its detractors.

In 165 operations on patients over 50, the mortality has been 18·6 per cent.; half these fatal cases were of malignant nature, and one-third were due to acute abdominal lesions; "in clean, non-malignant, elective operations the surgery of these aged people carries but a slight mortality." LAWRENCE JONES.

Inflammation of the Omentum.

LEROY (M.). *Archives Générales de Chirurgie,* August, 1907, pp. 102 and 196.

THESE lesions may be classified, as they involve the omentum in a hernial sac, in the abdomen or in both situations. The first is constantly noticed in old irreducible herniæ, in strangulation and in torsion of the omentum; the second most commonly is due to a spread of inflammation from neighbouring viscera or to some intra-peritoneal operation. The cause is always an infection; strangulation or torsion do not cause gangrene but merely limit the blood supply so as to favour bacterial invasion; and in the same way external violence may lower its resistance. The third variety mentioned above is generally the outcome of a spread from the hernial sac towards the abdomen. In the case of infection by propagation the omentum, by its adhesions, attempts to prevent the further spread of infection, and here an actual perforation of the offending viscus is not necessary, as is often seen in appendicitis.

To explain post-operative epiploitis one must again invoke the factor of diminished resistance, often due to a ligature, rather than that of accidental infection by the operator; often the omentum in the sacs of herniæ is already infected, and the ligature, by the damage it causes, helps to spread the infection. The extent of the lesion varies with the nature and degree of infection; there may be a congestive infiltration, small hæmorrhages, suppuration, sloughing, fibro-fatty changes or merely an adherent condition of the omentum.

Into the naked eye and microscopic changes of these conditions the author goes in detail. The symptoms of hernial and hernio-abdominal epiploitis must be studied together; usually they are those well known of inflamed hernia and pass off in a few days, leaving the hernia reducible or more often irreducible, but sometimes these may form an abscess of the sac, which may rupture externally or the process may spread up into the abdomen with more disastrous results. In the post-operative variety there are more or less acute peritoneal symptoms with the formation of a tender swelling; in 41 per cent. of the cases this condition goes on to a spontaneous cure, but it may lead to intestinal obstruction or to the formation of an abscess. In the form due to direct spread the symptoms are generally masked by those of the original trouble, but they may by exacerbations become again acute after the subsidence of the latter, or may, as in appendicitis, be caused later on by adhesions.

Clinically the cases may be separated into acute, subacute, latent and chronic. The complications are those due to spread throughout the general peritoneal cavity and those due to direct mechanical interference with the viscera by adhesions.

LAWRENCE JONES.

Mastoiditis in Infants.

NOVÉ-JOSSERAND (G.) and JACOD (M.). *Arch. Générales de Chirurgie,* September, 1907.

UNTIL the second year approximately the mastoid should be considered not as an annexe of the tympanum but as a part of it, for the iter is short, broad and straight. Also, up to this age the Eustachian tube is short and patulous. These facts, together with the natural recumbent position of the child and the frequency of naso-pharyngeal affections, should make mastoiditis a common event, and it may occur very early in life; the author has observed it at five weeks, three times at three months and so on. Further, the infection may occur simultaneously with the otitis media, and a prolonged infection of the tympanum is not necessary; in fact otorrhœa is often absent. Up to the age of two the antrum is practically the only cell, and is nearly as large as the antrum of the adult; usually the term "antritis"

would be more correct than "mastoiditis," although cases are found exactly comparable with the latter disease in the adult, or extending throughout the whole process or even further. Collections of pus beneath the overlying skin are very rapidly developed.

There is no clinical variation corresponding to the anatomical forms. Complications such as lateral sinus thrombosis, facial paralysis and meningitis are not common. If left to itself the process usually ends in the rupture of an abscess through the skin or into the auditory canal. The prognosis is much worse in those predisposed to tubercular infection. The diagnosis is usually easy, the early swelling and protrusion of the ear are characteristic; it should be remembered that otorrhœa is not a necessary accompaniment. Treatment consists in scraping away with caution all the diseased bone through a retro-auricular incision. The removal of bone does not require any instruments other than a curette. LAWRENCE JONES.

An Indirect Method of eliciting Pain at McBurney's Point.

ROVSING (TH.). *Zentralblatt f. Chirurgie,* October 26, 1907.

IN the autumn of 1904 the author saw two patients on the same day with identical symptoms. These symptoms were fever with pain in the right iliac fossa. There was in this region a diffuse tender swelling the exact outline of which could not be defined owing to muscular rigidity. Both cases were regarded as acute appendicitis. In the course of the examination it occurred to Rovsing to try whether the typical pain at McBurney's point could be elicited by pressure in the left iliac region. Bimanual compression of the descending colon was carried out in an upward direction with the object of forcing the gaseous contents of the gut backwards to the cæcum. This method gave in the two cases under observation diametrically opposite results. In the one case no pain followed severe compression of the descending colon, whilst in the other light pressure at once produced sharp pain at McBurney's point. Operation was performed in both cases. The case which gave a positive result was a typical case of appendicular abscess, whilst that case which gave a negative result proved to have a large purulent collection behind the ascending colon, the cæcum and appendix being quite healthy. From the time of these cases to the present the author has applied the test and found that its gives an absolutely reliable guide to acute trouble in the appendix.

In the differential diagnosis in the many cases of acute and chronic appendicitis in which a painful mass is present it is of the greatest value, since in cases where the origin of the mass is doubtful it may be renal in origin or due to ureteral stone or salpingitis, this test will give infallible indications.

E. D. TELFORD.

The Mega-Colon.

BAUMGARTNER (A.). *La Presse Médicale*, October 5, 1907.

THIS condition, known variously as idiopathic dilatation of the large intestine or Hirschprung's disease, is characterised by enormous dilatation, convolution and lengthening of the large intestine. The dilatation may involve the whole of the gut or may be limited to one or other segment. The intestinal wall is thickened, and may be more than double its normal depth, the circular muscle coat is increased, the subserous layer is the site of a diffuse small-celled infiltration, and the epithelium of the mucous coat is often shed in patches giving rise to ulcers which may lead to perforation. The disease is more common in males, and is usually seen in infancy; it has been encounterd in the fœtus. The cause of the condition is unknown. It may be entirely mechanical, in which case the dilatation is the result of some obstruction. There are, however, certain facts which militate against a purely mechanical view of the disease. In certain undoubtedly successful cases of lateral anastomosis the dilated segment has been short-circuited, but in spite of the fact that it is no longer in use it remains dilated. The vigorous peristaltic movements which may be observed negative any suggestion of a paralytic origin. It appears most likely that the fault is congenital in origin, and is in fact an instance of malformation in excess. The hypertrophy, the colitis and ulcerations on this view assume their true place as inevitable consequences of the original dilatation. The cardinal symptom is constipation with the passage at long intervals of very copious, hard and exceedingly foul motions. There is marked abdominal distension, and visible peristaltic movements are common. The distended abdomen often gives the sensation of containing a large doughy mass which retains the imprints of the fingers on firm pressure. The prognosis is grave since death by colitis or by intestinal obstruction usually follows in a few months.

The frequent use of large enemata with a carefully regulated diet will result in the relief of symptoms, and may bring about some reduction in the size of the gut.

Various surgical measures have been attempted. The establishment of an artificial anus is of no value except as a palliative measure in obstructed cases. Complete extirpation of the dilated colon is a severe procedure, but in some rare cases has led to complete recovery. In other cases entero-anastomosis has succeeded in relieving symptoms, but, as mentioned above, has led to no shrinkage in the dilated gut.

E. D. TELFORD.

The Special Features of Appendicitis in Children.

Lockhart Mummery. *Clinical Journal,* August 14, 1907.

In an article on the subject of appendicitis in children, Lockhart Mummery points out that the disease rarely occurs before the age of two years, but is common after that age. The special features of the disease in children are the difficulty in diagnosis and the rapid progress of the disease, general peritonitis setting in early.

In considering the diagnosis stress is laid on the difficulty in obtaining a reliable account of previous attacks owing to the prevalence of attacks of abdominal pain in children. The local signs on which most weight is laid are local rigidity, tenderness and swelling, and the necessity for a rectal examination in all cases is urged, special stress being laid on the large area of the abdominal cavity that can be examined in this way in children. The rapidity of the pulse is considered the most reliable constitutional symptom. In the differential diagnosis pneumonia with abdominal symptoms, typhoid fever and intestinal worms are discussed, while those cases with symptoms of acute peritonitis must be differentiated from tuberculous peritonitis, pneumococcal and gonococcal peritonitis. In the last-named condition the presence of vulvitis is of importance.

In the treatment early operation is urged because of the rapidity with which the disease progresses in children. The only cases in which one may wait are those in which slight constitutional and local signs make it certain there is no gangrene of the appendix. All abscess and peritonitis cases should be operated on at once. It is pointed out that children cannot stand long operations, and therefore operations must be rapidly performed and the minimum done, *e.g.*, abscesses should be merely opened and the appendix should not be sought for.

Due attention is paid to the after treatment, the necessity being pointed out of allowing free respiration by means of a cage to take off the weight of the bedclothes. Early feeding and early aperients should be employed, and no attempt should be made to fasten the child down in bed.

Garnett Wright.

Remarks on the Surgery of the Brachial Plexus.

Sherren (James). *Clinical Journal,* August 21, 1907.

In the term brachial plexus Sherren includes the anterior primary divisions, trunks and cords and excludes individual nerves arising from them.

Lesions of the plexus are classified into supra- and infra-clavicular varieties, as these differ both in their causation and prognosis.

Supra-clavicular lesions are generally due to indirect violence, such as a blow on the head or shoulder, or violence applied to these parts during birth. This affects chiefly the 5th anterior primary division at its junction with the 6th, the lower nerves being affected in diminishing degree from above downwards. The resulting paralysis is of the Erb-Duchenne type, viz., supra- and infra-spinatus, deltoid, biceps, brachialis anticus and supinator longus. The lesion results from traction on the plexus, leading to tearing of the perineural sheath, and hæmorrhage into the nerves. There may be incomplete or complete division of the nerve fibres. Later scar tissue is formed. When the traction is applied from below upwards, as in breech presentations with the arms extended, the 1st dorsal nerve is chiefly affected.

Post-anæsthetic paralyses are mostly supra-clavicular, and are produced by traction on the nerves from the position of the arms. More rarely they are due to direct pressure on individual nerves. The prognosis is good as a rule, as the lesion is incomplete.

Cervical ribs may cause supra-clavicular lesions by direct pressure, the lowest root being affected. Neuralgia down the inner side of the arm and wasting of all the intrinsic muscles of the hand ensues.

Supra-clavicular lesions may also result, but rarely, from fractures of the clavicle or penetrating wounds.

Infra-clavicular lesions are generally due to direct injury, *e.g.*, the pressure of dislocated head of humerus, fracture of the surgical neck of the humerus, injuries in reducing dislocations, etc.

In the diagnosis we have to determine (1) whether the lesion is complete or incomplete; (2) the exact location. The first point is settled on the electrical reactions, the response to constant current being slow, but not so slow as in complete degeneration. The localisation of the lesion depends on the application of anatomy. If the cervical sympathetic is affected the lesion must affect the 1st dorsal nerve near the intervertebral canal. It is also necessary to remember that the posterior thoracic nerve comes off from the 5th, 6th and 7th cervical roots close to the intervertebral foramina, and the supra-scapular nerve comes off from the upper trunk of the plexus.

The diagnosis of supra-clavicular lesions from circumflex paralysis depends on the associated paralysis of the supra- and infra-spinatus and the absence of any sensory paralysis. The condition of the trapezius, serratus magnus and rhomboids is of importance. Winging of the scapula may be due to paralysis of the serratus or the lower fibres of the trapezius or to both combined, and is most marked in the last case.

Lesions of the 1st dorsal nerve and inner cord are differentiated by the fact that all the intrinsic muscles of the hand are

paralysed, and all the fingers clawed to an equal extent, and in some root cases the cervical sympathetic is affected.

The prognosis is as a whole worse than in lesions of the peripheral nerves, partly owing to the nature of the injury, and partly owing to the distance of the lesion from the periphery. Infra-clavicular lesions have a better prognosis than supra-clavicular, because they are often due to direct pressure. The treatment in incomplete lesions consists of massage and exercises with avoidance of contractures. In complete lesions operative interference is necessary.

GARNETT WRIGHT.

A Consideration of the Causes and the Characteristics of the Weak Foot.

WHITMAN (ROYAL). *Medical Record,* August 31, 1907.

IN this article the author puts forward his well-known postural theory of the causation of the "weak foot," a term which he considers preferable to that of "flat foot" as it includes cases in which there is disability, though deformity has not yet taken place.

In the normal foot there can be differentiated two attitudes: (1) the attitude of activity, which is illustrated in the runner where the toes point straight forwards and the weight is balanced on the centre of the foot by muscular effort; (2) the attitude of passivity or rest seen when a person is standing at ease. Here the foot is everted, and the weight is directed toward the inner side of the sole. When the foot is bearing weight the eversion is brought about by an inward rotation of the limb on the foot, the astragalus sinking downwards and inwards on the os calcis.

The condition of weak foot or flat foot is simply a persistence or exaggeration of this normal attitude of rest. Thus the abduction of the foot is the primary deformity and the lowering of the arch is merely secondary. The symptoms are due, not to the deformity, but to the overstrain to which the disordered function exposes the foot.

The causes of the weak foot are those which favour the attitude of rest. They may be divided into four classes, one or more of which may act together:—

1. Congenital or acquired weakness of structure, such as is seen in rickets.

2. Weakness of the muscles, a condition which is responsible for the pain in the feet felt by a patient who is beginning to walk after an exhausting illness.

3. Overweight, such as an occupation involving much standing.

4. Improper attitudes. The most common improper attitude is the "out-toeing" of the feet in walking adopted by civilized

races. As a result of this, which is produced by outward-rotation of the limbs as a whole, the strain of the body-weight is thrown on the inner border of the foot and the spring of the calf muscles is lost. Later the calf muscles weaken from disuse. The persistence in outward rotation of the limbs predisposes to abduction of the feet and the attitude of the weak foot is thus developed.

The functional symptoms are those of local pain, which is commoner in the adult than in the child, and a sensation of " tire " along the inner margin of the foot. Pain in the heels and in the calf muscles is common.

The deformity is a progressive one, and consists (1) in a persistence of the improper attitude followed in order by (2) a limitation of the range of voluntary movements in the directions opposed to the persistent attitudes; (3) limitation of passive movements from secondary organic changes; (4) the evident deformity of which the important part is the abduction, the lowering of the arch being secondary.

So far as the attitude is concerned, one recognises three classes—(1) the abducted foot with a well-formed arch; (2) the abducted and flat foot in which the arch is lowered; (3) the flat and abducted foot in which the arch is entirely lost.

The principle of treatment of these cases is to prevent the persistence in the attitude of abduction by keeping the foot in the opposed attitude. This is brought about by first removing any obstruction to the range of movement of the foot, by improving the muscular tone, and by support in all cases where the mechanism is so weakened that the bones cannot be retained in position without it.

The details of treatment may be summarised as follows:—The shoes must fit well and have an inward twist to prevent abduction. The inner border of the sole and heel should be thickened. The patient must be instructed to cultivate an attitude of abduction, *i.e.*, walk with the toes straight forwards. Muscles should be strengthened by exercises adducting the foot and by tip-toe exercises with the limbs rotated in. As the heels descend the feet should be inverted so that he comes to rest on the outer border of the feet. In most cases a support is needed as well, the principle of which is to invert the feet and maintain an attitude of adduction. This is fitted to a plaster cast of the foot, the latter being made with the foot resting on its outer border and at a right angle to the leg. The brace is made of sheet steel and extends on the inner side to above the astragalo-navicular joint. On the outer side it covers the front part of the os calcis and the cuboid bones. On the sole it extends from the bearing surface of the heel to that of the big toe, the front and outer two-thirds of the foot not being supported unless specially indicated. Such a brace may be required permanently or in favourable cases may be dispensed with in 3—6 months.

Where organic changes have taken place some preliminary manipulations are necessary, consisting of forcible complete adduction if necessary under an anæsthetic and aided by tenotomy of the tendo-Achilles or the Peronei tendons. After forcible correction a plaster case is applied for from 2—4 weeks and subsequently the brace is employed as before.

GARNETT WRIGHT.

Movable Kidney.

HOWELL (C. M. H.) and WILSON (H. W.). *Practitioner*, 1907, p. 469.

THE authors agree that a certain amount of movement (about 2–5 cms.) is normal in the right kidney and is due to the respiratory movement communicated by the diaphragm, but there is little or none in the left kidney. Such movement is much more noted through a lumbar than through an abdominal incision.

They propose to group the various degrees of abnormal mobility as follows:

1. Kidney merely prolapsed.
2. Kidney prolapsed, and the lower pole rotated inwards, the kidney assuming the normal position when the subject is recumbent.
3. Similar to 2, but with anterior displacement, the kidney becoming more prominent in recumbency.
4. Kidney rotated only, without prolapse and often not palpable, save under an anæsthetic.

There is a very full description of the surroundings of the kidneys on the right side; the colon, if loaded, would tend to drag the kidney down, but on the left the colon, by means of its fixation above, would keep the kidney more firmly in place; other structures in relation with the left kidney, such as the pancreas, assist in its fixation. Of the three coverings of the kidney—the true capsule, the perinephric fascia and the fatty capsule—the second is instrumental by means of its strong posterior layer in keeping the kidney in place. The two layers fail to meet below and inwards, and it is in these directions that prolapse occurs; the ureter has a short course between the two layers before piercing the sheath, and it is at the latter point that kinking may take place. The fatty layer is especially marked at the lower pole of the kidney, forming a sort of cushion of support..

The frequency of movable kidney has been overestimated by most observers, who have assumed a kidney to be pathological whenever palpable. Pregnancy which is always supposed to be a frequent cause, and theoretically should be so, does not seem actually to have any influence. The condition is undoubtedly commoner in women than in men, for which the authors give three causes—(1) the shape of the renal fossæ in women; (2) the

frequency of constipation; (3) tight-lacing. Fully half the cases are observed between the age of 25 and 35.

It is pointed out that morbid changes found in the kidney may be either the cause or the effect of its mobility. The movable kidney is free to rotate in a circle, the radius of which is the neuro-vascular pedicle, the centre the origin of the renal artery from the aorta; it is by tension on this pedicle that symptoms are produced. There is no doubt that apart from obvious hydronephrosis very serious alterations may occur in the kidney from its undue mobility. The frequency of hydronephrosis is difficult to estimate, for a well-marked distension naturally masks the mobility, and it is only in the earlier cases that the cause would be recognised. By experiments on animals the authors have found that complete occlusion of the ureter leads to hydronephrosis, and that the urine which discharges after the relief of the obstruction is in excess of the amount of the dilated organ; that is to say, there is a polyuria following the decrease in tension. Hydronephrosis is much more likely to occur if mobility is combined with pressure from an aberrant renal artery. Infection is likely to occur when there is any obstruction to the ureter or when the kidney has become adherent to surrounding viscera. Clinically, examples of this disease may be classed as acute with severe symptoms due to kinking of the renal pedicle or chronic.

The element of neurosis has probably in the past been exaggerated.

As to treatment, operation is proper in the following conditions:—

1. Acute exacerbations of anterior renal pain, with vomiting or hæmaturia.

2. Evidence of pathological changes in the kidney, such as hydronephrosis, albuminuria, casts or increased frequency of micturition.

3. When the kidney is mechancally causing changes in other viscera.

4. Severe posterior aching, unrelieved by a truss.

In other cases a fair trial of Ernst's belt is recommended. Great care should be taken in the operation to secure primary union and complete hæmostasis. The organ must be fixed exactly in the right position, neither too high nor too low. Decortication is a decided advantage, the capsular incision being I-shaped and leaving about 3 in. by 2 in. of renal cortex exposed when the two flaps have been reflected; the sutures are placed so that three on each side take up the capsule and the flap, while two polar sutures take up the capsule alone; the sutures are passed only through the internal oblique and transversalis muscles, and are tightened after the layer has been sutured. The results obtained seem to show that the operation in selected cases is able to effect a complete cure. LAWRENCE JONES.

Muscle and Tendon Transference.

BRADFORD (E. H.). *Boston Medical and Surgical Journal.* Vol. clvii., p. 655.

THIS is an article based on an analysis of 38 cases, with periosteal insertion and silk strand elongation. Very perfect asepsis is necessary for a happy result, particular attention being paid to the skin and the silk, boiling the latter in corrosive or coating it with celluloid, as recommended by some, does not seem of any advantage. The plaster fixation should not be prolonged beyond the time of reasonably strong union, but the tendon must then be supported by some special apparatus and massage with muscle education must be persevered with for several months. The results have been favourable; the method is applicable not only to the foot but also to the shoulder and other groups of muscles which may be paralysed.

The author considers the results superior to those obtained by simple tendon transference without periosteal insertion and by tendon shortening.

LAWRENCE JONES.

Gastropexy and Retention.

NYROP (E.). *Annales Internationale de Chirurgie Gastro-Intestinale*, April, 1907, p. 188.

PTOSES of the stomach may be classed as follows:—

1. Gastroptosis complicated by retention—(*a*) the retention directly due to the ptosis, owing to the curve of the pylorus; (*b*) the retention is due to a pyloric narrowing of other origin.

2. Gastroptosis without retention—(*a*) without symptoms; (*b*) with symptoms (1) due to some nervous condition, (2) directly due to the gastroptosis.

The limitations of gastropexy as a cure for associated symptoms are exactly similar to those of nephropexy. The author considers that gastro-ptosis with retention is best dealt with by gastro-enterostomy. Gastropexy, although not causing actual pain from the adhesions produced, yet interferes considerably with the motor functions of the already atrophied muscle; this is in direct opposition to the view held by Rovsing as to the advantages of gastropexy.

LAWRENCE JONES.

Pathology.

A Remarkable and hitherto undescribed Muscular Lesion occurring in Sprue.

BRAMWELL (Byrom) and MUIR (Prof.). *Scot. Med. and Surg. Journ.*, 1907, p. 286.

DR. Byrom Bramwell and Prof. Muir direct attention to certain alterations in the voluntary muscles in 2 cases of sprue, which have not, apparently, been previously described; but which they suggest may be present in other cases of the disease in which the muscles are extremely atrophied.

In both the cases described, the muscles were markedly atrophied during life, so much so as to suggest the advanced stage of myopathic muscular atrophy. In neither case was there any paralysis, nor any fibrillary twitchings. The electrical reactions were not noted.

In the 1st case the peripheral nerves were normal, in the second case they were not examined.

In both the changes in the muscle were similar and consisted in a great proliferation of the nuclei of the sarcolemma, which, in places, were enormously enlarged, and absorption of the muscular fibres by these enlarged nuclei, degenerated remains of the former alone remaining. In the second case there was some increase of the intermuscular connective tissue, which appeared to be the result of the atrophy and not its cause. There was no lipomatosis.

The authors suggest that the muscular changes were due to the action of a toxin absorbed from the intestine.

The 1st case was one of typical sprue of two years duration, occuring in a man aged 67. The disease commenced in Singapore a year before the patient came under observation.

The patient, when seen, was very weak, emaciated and anæmic. He looked as though he was suffering from pernicious anæmia or advanced malignant disease. He had severe diarrhœa, the motions being copious, watery and pale, and usually attended with the passage of much flatus. Vomiting of copious watery matter was also frequent; the attacks usually occurred with great suddenness, so much so, that on more than one occasion, when the patient was seated before the fire, the sudden copious watery discharge had been sufficient to extinguish the fire. The blood was not suggestive of pernicious anæmia. The red blood cells numbered 2,400,000 per c.m.; the hæmoglobin was 34 %.

The patient improved for a short time under treatment, but then relapsed and became progressively weaker and thinner,

losing 4 st. 2 lbs. in weight in 6 months. Emaciation and wasting of the muscles became extreme. The patient died rather suddenly during an attack of acute bronchitis, one year after first coming under observation.

The post-mortem examination, made the following day, revealed extreme atrophy of the mucous membrane of the stomach and intestines, most marked in the small bowel. The intestines were somewhat distended and their walls were thin, semi-transparent and anæmic. The voluntary muscles were much atrophied and appeared soft, paler and more transparent-looking than normal. Histological examination of the small intestine showed extreme atrophy of all the coats. The villi were stunted and devoid of epithelium; the lymphoid tissue was atrophied. The muscular coats were atrophied and some of the fibres had lost their nuclei. The large intestine showed similar changes. Of the voluntary muscles, a piece of the biceps was examined. Some of the fibres were of nearly normal size, some retaining their transverse striations, some being homogeneous. Here and there, the nuclei of the sarcolemma were seen to have multiplied, and to have become enlarged, and peculiarly convoluted in appearance, the change being accompanied by absorption of the muscle substance. All stages could be seen from atrophy of the fibres, homogeneous change of the muscle substance, partial obliteration of the fibre with proliferated nuclei down to complete disappearance. The nerve going to the muscle was examined but was found to be normal.

Professor Muir expresses the opinion that the changes in the muscle indicate degeneration as the result of a toxæmia, the toxin possibly being absorbed from the intestine. The change described in the nuclei has been met with in some other pathological conditions of muscle, but not to the same degree as in the case described.

The second case was one of typical sprue of ten years duration occurring in a man of 40. Extreme emaciation and muscular atrophy were present. The disease began 18 months after the patient arrived in the Straits in the year 1887. Treatment with rectal injections of nitrate of silver and a mixed raw meat and milk diet improved his condition, but he was compelled to return to Scotland for good in 1894. By dieting himself the patient was able to keep in moderate health—always improving in the summer when he could get plenty of strawberries and the weather was warm. He spent the winter of 1897 in Penzance, being in a fairly plump condition, but returned in the spring of 1898 a "walking skeleton." He maintained his strength fairly well till the autumn that year, but grew progressively thinner and weaker from that time onwards and died in May, 1899. A complete post-mortem could not be obtained, but a portion of the biceps muscle was kept and examined. The same changes were found as in the first case but not to so marked a degree, and

there was in addition some increase in the intermuscular connective tissue.

The microscopical appearances in both the cases are figured by means of micro-photographs and a coloured plate.

A somewhat similar change in the nuclei, though much less marked in degree, was present in a peculiar case of muscular atrophy, which is recorded by the authors. The only cause for the wasting which suggested itself in this case was chronic poisoning by tobacco taken in the form of chewing—a view tending to support that of toxæmia as the cause of the muscular wasting in the cases of sprue.

The patient in this case was a married man aged 64. He had been active and healthy, but began to complain of loss of flesh and progressive muscular weakness and cough about a year before he was seen by Dr. Bramwell. He was then extremely emaciated and so weak as to be unable to raise himself in bed, but able to stand and walk when assisted to his feet. Repeated examination failed to find any evidence of visceral disease. The urine was normal.

The patient complained of pain on pressure over the bones especially over the lower end of the sternum, superior iliac crests and vertebral spines, but nothing abnormal could be found.

A history of excessive tobacco chewing was obtained, though the patient stated he was very susceptible to the action of tobacco when smoked.

The atrophied muscles contracted actively to the faradic current. There were no fibrillary twitchings. The patient gradually became weaker and weaker, and died 11 months after first coming under observation.

A post-mortem examination was made on the day after death, when decomposition was already advanced. The dura-mater was stained by putrefaction; the spinal cord was very soft.

The organs of the body showed no change of special importance with the exception of the heart, which was much atrophied. Portions of several muscles, of the heart muscle and the cord were examined microscopically.

The most noticeable change in the muscles was the large proportion of muscular fibres of very small size interspersed with those of larger size, the striation being very well preserved. A few homogeneous fibres were found. In places there was proliferation of the nuclei of the sarco-lemma, especially well marked where the fibres were degenerated. In some of these nuclei were so large as to cover or replace the fibres. The changes were on the whole similar to those seen in the cases of sprue, but were present in a minor degree.

The walls of the arteries were distinctly thickened. No evidence of any primary change in the cells of the spinal cord

could be made out. The nerve roots and the portions of spinal nerves examined were healthy. From the condition found, Professor Muir considers the case to be one of myopathic atrophy. R. S. TREVOR.

Recent Researches on the Signification of the Cardiac Nerve Ganglion.

SANTESSON (C. C.). *Prager med. Wochenschr.*, xxxii. Jahrg., No. 51.

PROF. SANTESSON is obviously one of the minority who are not yet convinced that the stimulus which causes the rythmic contraction of the heart acts directly on the muscle fibres, without the intervention of the nervous system, and that the impulse originated in the sinus venosus is transmitted by muscular and not by nervous channels. He admits that portions of heart muscle will contract rythmically when apparently entirely separated from any nervous connection, but he does not seem to be convinced that the absence of nervous elements in the parts experimented upon has been definitely proved, and he lays great stress on Carlsson's experiments on the heart of Limulus polyphemus, in which the cardiac nerve ganglia are situated entirely outside the heart substance, and can be removed or experimented upon without any direct injury to the heart. Experimenting on this most favourable object, Carlsson found that destruction of the cardiac nervous apparatus was followed by the loss of spontaneous contractions. The heart musculature was still responsive to mechanical or electrical stimuli, but it did no originate impulses. The experiments also showed that the stimulus which produced rythmic contraction travelled by the nerve cords and not through the muscular substance. Prof. Santesson thinks that if in so lowly organised an animal as Limulus the rythmic heart contractions originate in the cardiac ganglia and the rythmic contraction is controlled by the nervous system, whilst the myogenic contractility present in the embryonic condition is lost, it is scarcely likely that in the higher and more specialised forms the primitive embryonic conditions are retained. ARTHUR ROBINSON.

Paratyphoid Infections.

SACQUÉPÉE (E.). *Rev. de Méd.*, 1907, pp. 1173–83.

AFTER reviewing the characteristics of the paratyphoid organisms A and B, and remarking that while the comparatively rarely met with paratyphoid bacillus A seems to be in a class by itself, the B bacillus conforms to the characteristics of the hog-cholera group, which also contains the bacillus Aertyck of food poisonings, the writer passes to the clinical signs of paratyphoid fever.

Attention is drawn in a footnote to Zupnik's suggested classification of the paratyphoid infections into (1) Brion-Kayser, the present "A"; (2) Schottmüller, the present "B"; and (3) those due to the more recently described bacillus of Longcope. The diagnosis cannot be positively made without the help of bacteriology; here blood culture is of much greater value than agglutination. The clinical types of the B infection are two—(1) severe or typhoidal; (2) mild or gastric. In the severe type the onset is usually acute, and the acme reached in about four days; the mortality is only about 1 per cent.; perforation never occurs; hæmorrhage is never fatal, and occurs in only 2–3 per cent. of the cases. Roseolæ are almost always present in large numbers, relapses are as frequent as in enteric, while the average duration is somewhat shorter. These cases may again be divided into a short form lasting from 4—8 days, which is, however, always associated with rose spots; and a longer form of 2–3 weeks' duration, with only slight fever, but in which the general symptoms may suggest subacute tubercle. Several epidemics of paratyphoid fever B have been shown to be caused by the ingestion of infected water, and others, with less certainty, by that of unwholesome food. The method of transmission of paratyphoid fever A has not been worked out. It is well known that the paratyphoid fevers are much more easily spread by infected urine and stools than ordinary typhoid. The above observations on paratyphoid fever B were based on 500 recorded cases. Paratyphoid fever A, according to 11 recorded cases, resembles a moderately severe typhoid with an unusual frequency of relapses and complicating pneumonias, and with a constantly occurring constipation in the acute stage. One of the 11 cases died. Several of the cases had catarrhal jaundice. Reports on autopsies disclose a variety of findings. In that on Longcope's case of paratyphoid A, fatal on the 12th day, an enlarged liver and spleen and hardened mesenteric glands were found. In the autopsies on the case of B infection the appearances generally resembled dysentery rather than typhoid. Where ulcers were found they were independent of Peyer's patches and of the solitary follicles, which were not affected. There was a submucous leucocytic infiltration. The spleen, liver and kidneys showed necrotic areas. Brion and Kayser alone of all the observers reported findings similar to those in enteric fever.

FRANK E. TYLECOTE.

A Case of Unpaired Kidney associated with Anomalies of the Genital Organs, the Abdominal Arteries and the Skeleton.

VEROCAY (I.). *Prager med. Wochenschr.*, Jahr. xxxii., No. 49. THE case described by Dr. Verocay has no definitely practical but many interesting scientific bearings. The patient in whom

the abnormal conditions were found had lived for 49½ years; he was strongly developed, and apparently his various anatomical peculiarities were not in any way the cause of his death. A kidney was present on the left side only. It was of more than ordinary size, and was connected with the bladder by an outer or upper and an inner or lower ureter which terminated respectively in the ordinary situations of the left and right ureters. Presumably therefore the rudiment of the right kidney fused with the rudiment of the left kidney at an early period of development, and the fused rudiments ascended together to the left lumbar region. The renal anomaly was associated with a very high division of the aorta, and the kidney, possibly in consequence of this high division, was supplied with blood by branches of the right and left common iliac arteries. The left vas deferens was defective, and the left common ejaculatory duct ended blindly, but in spite of the absence of connection between the genital duct and the urethra normal spermatozoa were found in the epididymis. The sternal and vertebral ends of both first ribs were present, but the intermediate portions of both bones had either not formed or had been absorbed. As regards the causative influences, to which these abnormalities were due, the author gives no definite clue, but it is clear that as regards the genito-urinary abnormalities at all events, the deviations from the normal must have commenced after the renal buds were given off from the Wolffian ducts, that is, after the fourth week of fœtal life.

ARTHUR ROBINSON.

A Case of Primary Adrenal Carcinoma of the Liver.

POWELL WHITE (C.) and MAIR (W.). *Journ. of Path. and Bact.*, October, 1907. Pp. 107—110, Pl. xix. and xx.

THE liver here described, and which alone was the seat of growth, was obtained from a man æt. 70, who had no jaundice and no clinical symptoms of special interest. It weighed 128 oz., and the left lobe was specially enlarged. The growth seemed to have spread along branches of the portal vein which contained nodules of growth. It consisted of epithelial cells arranged in columns between capillaries with a well-marked endothelium, a scanty amount of stroma, a large amount of glycogen and the presence of fat chiefly in the cells in close contact with the capillaries (as in the adrenal body). From these facts the authors regard the growth as of adrenal origin and arising from an adrenal "rest." References to previously reported cases are given.

J. M. BERNSTEIN.

An Experimental Investigation of the Phagocytic Action of the Alveolar Cells of the Lung.

Briscoe (J. Charlton). *Journ. of Path. and Bact.*, Oct. 1907, pp. 66—100.

The object of this investigation was to determine the factors which enable the lungs to get rid of invading micro-organisms. Briscoe experimented with pigeon's red corpuscles, potato bacilli, staphylococci and Friedländers pneumobacillus. Experiments were made on the guinea pig and in vitro. He draws the following conclusions.

(*a*) The mononuclear cells—whether containing pigment granules or not—which are present in the alveoli when of sufficient size, are powerful phagocytes.

(*b*) The phagocytic power of these cells depends on an opsonin present in the serum or attached to the injected bodies.

(*c*) With a mild infection the alveolar cells carry by the help of an opsonin and without the intervention of leucocytes, free the lungs of the organisms.

(*d*) If the infection is more virulent, but not fatal, the polymorphs lend active assistance.

(*e*) If the infection is severe enough to produce a fatal result the alveolar cells are unable to overcome it, either alone or with the aid of the polymorphs, although some phagocytosis takes place.

(*f*) Phagocytosis by the alveolar cells is more rapid when the injected bodies have been treated with immune serum than when untreated organisms are injected into previously immunised animals.

(*g*) Phagocytosis is more rapid when the animal injected has been previously immunised than when a normal animal is employed.

(*h*) During the first 1½ hours after injection polymorphs are only occasionally found; therefore—

(*i*) In this period phagocytosis is limited to the alveolar cells.

(*j*) The disintegration of these large cells, which occurs between 15 and 25 hours, corresponds to the second period of phagocytic activity, and to the regeneration of cells lining the alveolars.

(*k*) The bronchioles, not being lined with phagocytic cells or mucous glands, must be considered to be at a disadvantage as compared with the alveoli during the early part of an infection spreading down the trachea.

(*l*) The injection of salt solution into the lungs gives rise to a series of changes which correspond to those which follow a similar injection elsewhere.

(*m*) Serum injected subcutaneously is rapidly passed out of the body, or otherwise rendered inoperative.

J. M. Bernstein.

A Case of Congenital Syphilitic Aortitis.

KLOTZ (OSCAR). *Journ. of Path. and Bact.*, October, 1907.

THE specimen was obtained from a still-born child with an indefinite history of congenital syphilis. The mother was healthy. No other lesions were noted. The aortic lesions were identical with those of acquired syphilis, consisting principally of a proliferation of vasa vasorum with a surrounding inflammatory exudation and milder changes in the interna and adventitia. The author suggests that scarrings and puckerings of the aorta in adults, usually considered to be evidence of acquired syphilis, might be the healed results of a congenital syphilis.

J. M. BERNSTEIN.

Histological Notes on the Origin of Rodent Ulcer.

NOON (L.). *Journ. of Path. and Bact.*, October, 1907.

THE writer, from the examination of some cases which are depicted, concludes that there is convincing evidence of the origin of rodent cancer from the Malpighian layer of the epidermis, near the necks of the hair follicles and from the reflection of this layer which forms the outer root sheath of the hair.

J. M. BERNSTEIN.

Polyarteritis Acuta Nodosa and Periarteritis Nodosa.

CARNEGIE DICKSON (W. E.). *Journ. of Path. and Bact.*, Oct., 1907, pp. 31—56.

THE author claims this case to be the only one of its kind recorded in this country and he can only collect 18 from other literature. A message-boy, æt $14\frac{1}{2}$, after a six weeks' illness characterised by adominal pains, progressive weakness and lassitude, developed convulsive attacks which became more frequent, and was admitted to the Edinburgh Royal Infirmary comatose. There was no cardiac or respiratory disease noted but there was slight albuminuria and abdominal pain and tenderness. Lumbar puncture revealed nothing abnormal. There were more fits, pyrexia reaching $102\cdot^{\circ}2$ at times, and he died 10 weeks after the onset emaciated and asthenic. The suggested diagnosis was tuberculosis or possibly pneumococcal meningitis. The autopsy showed: Nodules of polyarteritis acuta nodosa on the small and medium-sized arteries of the heart, liver, spleen, kidneys, mesentery, brain and spinal cord; subacute nephritis and infarcts in the kidneys; rupture of, and hæmorrhage from, aneurysmal dilatations upon surface vessels of brain; peculiar infarction of lungs. Evidence of old standing tuberculosis of mesenteric and other glands.

Detailed histological observations were made and the author

regards the most important part of the lesion to be the complete destruction of the middle coat with the consequent giving way of the internal elastic lamina and the inner and outer coats—a condition usually tending to result in a distinct aneurysmal dilatation.

After reviewing in detail all the cases hitherto reported he draws the following conclusions :—

1. Under the term periarteritis nodosa two entirely distinct diseases have hitherto been described, viz., (*a*) periarteritis nodosa—a true periarteritis, nodular in its distribution, the majority, if not all, being syphilitic in origin; (*b*) polyarteritis acuta nodosa—characterised by the formation of small localised nodules upon the smaller and medium-sized arteries.

2. In the case of the latter disease the earliest discoverable changes are in the outer coat. The process rapidly spreads inwards, so that the most complete destructive lesions are found in the muscular coat. These are accompanied by local inflammatory changes (cell exudation, etc., around the vasa vasorum), and are followed by a giving way of the internal elastic lamina and the other coats. Thrombosis of the lumen of the vessel and dilatation is an almost constant association, as are also proliferative changes in the outer and inner coats. Secondary changes, such as infarction, necrosis, hæmorrhage, etc., may occur in the part supplied by the affected vessel.

3. The channels of infection are probably the vasa vasorum, or perhaps the perivascular lymphatics.

4. The etiology is obscure. The cause is almost certainly some bacterial or other infective organism or its toxin. No positive evidence as to the nature is afforded by the present case, staining for all ordinary bacteria and for the spirochæta pallida having given negative results.

A complete bibliography and illustrations are appended.

J. M. Bernstein.

Experimental Atheroma.

Rickett (G. R.). *Journ. of Path. and Bact.*, October, 1907.

After summarising the work that has been done on this subject during the past few years, the author details his own experiments on rabbits with adrenalin and other drugs which raise the blood pressure, viz., squills, barium chlorate, tobacco and nicotine. Injections were given at frequent intervals for times varying from a few weeks to a few months, and he arrives at the following conclusions :—Atheroma is due to a merely mechanical factor, namely, the increase of blood pressure. Other substances which raise the blood pressure, besides adrenalin, can produce atheroma in rabbits, but the changes vary directly with the power of the drug. In three out of four animals treated with nicotine he produced atheroma. The lesions had a patchy

distribution, and he holds that no evidence exists to support the view that the drug acts through the agency of the vasa vasorum. The changes observed were (1) stretching and frequent breaking of the elastic fibres; (2) leucocyte activity about the site of these fractures; (3) fibrillation and splitting of the elastic fibres rapidly followed by (4) granular disintegration; about this time degenerative involvement of the muscle is noted; (5) deposition of calcium salts and formation of plaques and formation at the margins of connective-tissue. The intima may or may not be thickened. The fibrosis is reparative. Such disease in normal rabbits may, as the result of investigation, be excluded. The most important conclusion the author makes is that high blood pressure certainly causes great damage to the arterial system, thus supporting the teaching of the Cambridge school, in whose laboratories the work was carried out.

J. M. Bernstein.

Further Observations on the Thyroid Gland.

Edmunds (Walter). *Journ. of Path. and Bact.*, October, 1907. Pp. 101—6, Pl. xiii.—xviii.

The author describes his experimental work in reference to secretory nerves of the thyroid gland. He excised in dogs a portion of the superior laryngeal and the vago-sympathetic nerves, thus destroying any secretory fibres coming *viâ* the cerebro-spinal nerves (the paralysing operation); in some the opposite lobe of the thyroid was also excised. Control experiments consisted in excision of one lobe only in eleven dogs. His conclusions are:—

1. That the paralysing operation has some effect; 5 out of 19 animals had athyroidic symptoms, whereas none of the simple one-lobe excisions were followed by symptoms.

2. This effect is not so great as to render the lobe useless because the surviving dogs always had severe athyroidea when the "paralysed" lobe was removed.

3. Microscopically, out of 9 simple one-lobe excisions well-marked "compensatory hypertrophy" occurred twice in the second lobe, distinct but less pronounced hypertrophy three times; whereas in 15 paralysing operations pronounced hypertrophy did not occur at all, slighter hypertrophy twice, the lobe remained normal in 11, and in 2 flattening of the secretory cells with collapse of vesicles occurred.

Thus it seems that the paralysing operation does produce some effect, both clinical and pathological, but not great. He infers that the thyroid secretion is due mainly to a chemical stimulus acting directly on the secreting cells or the nerve endings distributed to them, or to fibres which pass along the blood-vessels with the sympathetic fibres.

He quotes other authors in support of the non-existence of secretory nerves.

J. M. Bernstein.

The Variations in the Opsonic Power of Streptococci.

BANKS (A. G.). *Journ. of Path. and Bact.*, October, 1907, pp. 113—122.

THE author investigated 14 cases of scarlet fever of various types, using throughout 4 strains of streptococci. His conclusions are as follows:—

1. In cases running a fairly normal course the opsonic power varies in a pretty definite and constant way. It is decreased during the early febrile period and rises to normal or above with the defervescence and general decline of symptoms. It falls during the second and third weeks, and even in uncomplicated cases the opsonic index may be comparatively low. There is an increase to normal or over during the fourth and fifth weeks.

2. In fatal cases with severe angina the opsonic power is markedly subnormal.

3. Complications alter the usual curve, causing both relative and absolute differences. Thus the opsonic power is decreased at the onset and during the earlier period of albuminuria, severe nephritis and secondary adenitis; it rises with convalescence.

4. Support is lent to the view that nephritis is due mainly if not entirely to streptococcal invasion of the kidney.

5. The opsonic values do not furnish many data for prognosis, but in general a persistent low index during nephritis or other serious complication is an unfavourable sign.

6. A definite relationship to the streptococcus scarlatinæ has been demonstrated, but there is no striking difference in the results obtained with typical and atypical varieties respectively of this organism.

J. M. BERNSTEIN.

Note on the Demonstration of Eosinophile Granulation in the Cells of Chloromata.

LEIGHTON (F. F.). *Journ. of Path. and Bact.*, October, 1907, pp. 111–112.

THIS posthumous paper emphasises the granules in the cells of chloromata, which are difficult to stain, and, to the author's belief, have not been previously described. Coarse and fine eosinophile granules were found in proportions not less than may be found in many specimens of ordinary bone marrow. He was inclined to regard the blood of a case of chloromata as myelocytic with the large hyaline myelocyte predominating. Though there is not as a rule great splenic enlargement, the cases being very acute, nor great or universal gland enlargement, he regarded chloroma as most related to the spleno-medullary form of leukæmia. The material was obtained from two cases.

J. M. BERNSTEIN.

The Botanical Diagnosis of the Leptothrix Racemosa and its relation to the Modern Doctrine of Bacteriology.

VINCENTI (V.). *Medicine*, 1906.

VINCENTI describes minutely the appearance of the highly complex organism found on the *patina dentina* or the tartar of the teeth and called by him "leptothrix racemosa." He found that it is necessary to use a very high magnification, $^1/_{25}$ in., and he stains with iodated potassium iodide. The leptothrix racemosa consists of two main layers—(*a*) the upper layer of aerial tufts; (*b*) the deeper felt work lying in contact with the teeth.

The upper layer consists of:—

1. The fructification heads, made up of (a) central stem; (*b*) pedicles or sterigmata which bear the (*c*) sporules; (*d*) a viscid or glairy element surrounding all.
2. Younger filaments or paraphyses with branching roots.
3. Male organs or points.

The deeper layer consists of two main elements—(1) the lower stumps, possibly roots of the fructification heads, corresponding to the "bacillus buccalis maximus of Meller"; (2) the matrix or felt work lying on the teeth, and consists of (*a*) bundles and chains of filaments, (*b*) crowded masses of cocci.

The author considers that the above is the true and correct description of the organisms, parts of which have been described separately by authors under various names.

This new organism cannot be regarded as a simple fungus or as a simple alga, but is rather a superposition of one or the other, having a relation of mutual dependence constituting a symbiosis. This makes it somewhat analagous to the lichens, but it must be classed among the higher bacteriaceæ owing to the numberless bacterial elements which are shed into the mouth by this parent organism.

Vincenti considers that leptothrix racemosa is the source of most of the organisms found in the mouth and many others in the body, and he enters into a long discussion to combat what he calls the fallacy of bacteriologists:—the conception of the botanical independence of bacteria as simple monocellular organisms. He considers that they are, on the contrary, "passing phases of some parent organism, scattered particles of a more complex body," one of the higher bacteriaceæ such as leptothrix, cladothrix, etc., and cites as argument the branching forms of some bacteria, such as tubercle, which, he asserts, are evidently intermediate forms, a degeneration from a mycelial fungus, and tells us that "neither their morphological appearance nor reactions to stains, nor growth on artificial media, nor their asserted pathogenicity can assist in an exact determination of their species."

J. R. CARVER.

Experimental Immunity to Colon and Typhoid Bacilli.

VAUGHAN (V.) and WHEELER (M.). *New York Medical Journal*, June, 1907.

THE authors have found that by growing many bacteria in massive culture and extracting with saline solution, alcohol and ether, there is a residue of the cells consisting of a proteid body which is toxic when injected into animals. They call these toxins "crude bacterial poisons." They can be boiled without loss of their toxicity. The toxic power is not in proportion to the pathogenicity of the bacteria.

These crude bacterial poisons can be split up by means of an alkali into two substances, one poisonous the other non-poisonous, and it is found that many other proteid substances of both animal and vegetable origin, such as egg-white, casein, edestrin from hemp seed contain similar substances.

The poisonous part is soluble in alcoholic solutions of alkalies and this is called soluble proteid poison "though they are not true proteids themselves, and one great difference is that they do not contain phosphorus, and are free from carbohydrates.

The poisonous effects are prompt and characteristic, the symptoms are (1) peripheral irritation, (2) exhaustion, (3) clonic convulsions, (4) death from cessation of respiration. They have no effect when administered by the mouth.

The non-poisonous residue after extraction with alcoholic solution of alkalies gives all the proteid colour reactions, and contains all the phosphorus and all the carbohydrates of the original molecule.

The injection of the non-poisonous part of the bacterial residue has a distinct specific immunising effect for inoculations of the living bacterium itself, and series of experiments are described which demonstrate this.

Guinea pigs inoculated at intervals of three to four days with the non-poisonous residue of the Bacillus Coli or B. Typhosus acquire an active immunity to many times the fatal dose of the living bacillus. The degree of immunity does not depend so much on the amount injected as on the number of injections and the interval of time over which they have been continued.

The immunity is distinctly specific, a typhoid residue or one from white of egg, etc., does not give immunity against the Bacillus Coli.

J. R. CARVER.

A Suppurating Supernumerary Ureter opening into the Prostatic Urethra.

CHUTE (A. L.). *Boston Med. and Surg. Journ.*, vol. clvii., No. 12.

THE case described by Dr. Chute is interesting not only on account of the clinical history and the care taken in the physical examination, but also on account of the rarity of the condition of which only about fifteen cases are recorded.

The clinical history and the physical examination only led to the conclusion that neither of the kidneys connected with the normal ureters was the cause of the turbidity of the urine, and it was only by means of an exploring operation that the diagnosis was made. The abnormal ureter which was associated with the left kidney was dilated and suppurating. At first only the lower part of it was removed and the upper part drained. Ultimately it became necessary to remove the left kidney, and then it was found that there were two distinct pelves one connected with the normal and the other with the abnormal ureters, the latter as is usual in these cases being the higher. Dr. Chute suggests that when cystoscopic examination and catheterisation of the normal ureters in cases giving evidence of kidney trouble give no clue to the seat of the disease, it is necessary to ascertain if a jet of pus can be ejected after the bladder has been emptied. He thinks that when this is possible, and when there is no perineal hardening indicating local trouble in the urethral region, an accessory ureter opening into the prostatic urethra may be suspected. ARTHUR ROBINSON.

On a hitherto undescribed root of the Glossopharyngeal and the Vagus Nerves.

HUGUENIN. *Corresdondenz-Blatt f. Schweiz. Aertz.*, October, 1907, No. 20.

IT is generally believed that the fibres of the vagus and glosso-pharyngeal nerves are connected with the so-called dorsal nucleus situated in the region of the ala cinera of the floor of the fourth ventricle, with the nucleus ambiguus, and with the fasciculus solitarius; as Prof. Hugenin points out there is a probability that the dorsal nucleus is mixed and not entirely sensory as was formerly believed, that the nucleus ambiguus is chiefly motor and that the fasciculus solitarius is particularly associated with the sensation of taste. In addition, however, Prof. Hugenin asserts that a large number of the sensory fibres of the vagus and glosso-pharyngeal nerves pass into the so-called spinal root of the fifth nerve, and so become connected with the cells of the substantia gelatinosa of Rolando which serve as a large sensory nucleus. ARTHUR ROBINSON.

Two Cases of Accessory Pancreas.

ELLIS (A. G.). *American Medicine*, September, 1907.

NEITHER of the two cases recorded by Dr. Ellis had any clinical significance. In one the accessory pancreatic nodule lay in the hilus of the spleen of a premature male child, and the other was found in the submucosa of the stomach of a male negro aged 86 years. In association with the pancreaatic nodule in the second case an adenomatous development had occurred, and Dr. Ellis thinks that there were signs of incipient carcinoma.

ARTHUR ROBINSON.

Therapeutics.

The "Crawling Treatment" of Scoliosis.

Kuh (R.). *Prager med. Wochenschr.*, 1907, No. 52.

The writer discusses the merits and demerits of the system of exercises advocated by Klapp of Bonn, and based upon observation of the movements of the spine in the gait of quadrupeds. The main principle is the horizontal posture of the trunk: a greater range of lateral movement of the spine can be obtained through the agency of the shoulder and pelvic girdles in this than in the erect posture. In the animal, when the fore and hind legs of the same side are approximated in one phase of walking, the spine is concavely curved to that side, and the curvature is further increased if the head is also turned in that direction. The hands and knees are protected with sandals, and the child crawls forwards curving the spine alternately to right and left. In little children there is no difficulty, since the creeping movements come naturally to them, but in older children certain modifications are necessary, and Klapp has proposed three methods. In the first the child moves quickly forwards so as to carry out rapid lateral movements with the spine quite loose; at the same time the head is moved from side to side, the child being told to look backwards. The second consists of slower and more forcible movements, first on one side then on the other. The third modification is a forced local bending to overcome the thoracic deformity. In some forms the child is made to crawl in a circle. The movements are carried out at first for a quarter of an hour, morning and afternoon, increased to two hours a day. Klapp's aim was to develop the back muscles, but the writer points out that excessive development of the muscles where the bones are soft is likely to aggravate the deformity. The energy and persistence required forbids their use in weakly and anæmic children. Good results are obtained in round back and in mild cases of scoliosis in which the muscles retain some power. The method is not suited to severe cases in which the muscles are atrophic, for the stretching of the inter-vertebral discs and relaxation of the spinal ligaments resulting tends to aggravate the condition. Another drawback is the unsightly attitude of the shoulders which may result, the scapulæ being raised and displaced outwards. The cases must therefore be studied and carefully selected.

G. R. Mill.

Stovainisation of the Spinal Cord.

CHAPUT. *La Presse Médicale,* November, 1907.

M. CHAPUT recommends anæsthesia, produced by subarachnoid injection of stova-cocaine, not only for perineal and abdominal operations, but also for operations on the thorax and head and neck. He makes light of the dangers which have been supposed to be necessarily associated with the process, and states that anæsthesia of the head and neck may be easily and surely secured without risk of danger by paralysis of vital centres in the medulla. He has noted that in some cases the motor nuclei of the fifth, ninth and twelfth nerves are affected, whilst the pulse varies from 60 to 100 and the respirations from 16 to 20, from which he infers that the pneumo-gastric centres and roots are less readily affected than the roots and centres of other nerves by local as well as by inhalation anæsthetics. M. Chaput claims to have used subarachnoid injections of stova-cocaine for purposes of general anæsthesia in many diverse cases, and with no bad results, and he states that success is assured and serious dangers are avoided if the necessary precautions are taken. The method must not be used on patients affected with arterio-sclerosis, especially if they are old. As a general rule the patients should not be above sixty-five years old, and they must be free from cachexia, anæmia, albuminuria, diabetes, syphilis and diseases of the nervous system. The method of procedure M. Chaput advises is as follows: Inject subcutaneously a quarter of a milligramme of scopolamine one hour before the operation. Abstract 10—15 cubic centimetres of cerebro-spinal fluid from the lumbar region. Inject in the same region 4 cubic centimetres of $\frac{3}{4}$ to 2 per cent. stova-cocaine solution, that is, 8 centigrammes dividing the injection into two parts. If the pulse fails inject a solution of caffeine under the skin.

ARTHUR ROBINSON.

On the Use of Potassium Iodide and Mercury in Cases of Tuberculosis of Nose, Pharynx, and Larynx.

GRÜNBERG (K.). *Münch. med. Wochenschr.,* August 20, 1907.

THE writer states that some little time ago he published a paper in which he recorded the following conclusions:—

1. That primary tuberculosis of the mucous membrane of the upper air passages can in most, but not in all, cases be cured by the internal administration of potassium iodide with or without local treatment.

2. That since such cases sometimes heal spontaneously, the healing cannot with absolute certainty be attributed to the potassium iodide, but the beneficial results which so quickly

follow its employment when other therapeutic measures have failed, leave little room for doubt on this point.

3. That in the differential diagnosis between syphilis and tuberculosis the fact that the lesion clears up under potassium iodide does not of necessity indicate the former.

The cases which have been benefited are those of primary or ascending tuberculosis of the upper air passages, *i.e.*, in which the tuberculous process extends from without inwards, from the nose and pharynx to the lungs. In such cases it is generally found that the lungs are rarely, and then relatively late, involved. More recently the writer has found that mercury administered either as injections or inunctions, has also been of great service.

He describes four cases in brief, and then gives a full account of the following interesting case, in which a woman, æt. 33 years, suffering from severe and extensive tuberculosis of the palate, pharynx and larynx, was cured by the administration of mercury and potassium iodide. The uvula was swollen and ulcerated on its anterior surface. The right lateral pharyngeal wall presented an area of nodular granulations extending downwards in the line of the salpingo-pharyngeal fold. The epiglottis was markedly swollen and turban-shaped, its surface nodular and in places ulcerated. The left ary-epiglottic fold was enlarged and infiltrated. The view into the larynx was thus somewhat obstructed, but as far as could be made out, for the rest it was normal.

There is no doubt about the exact diagnosis, since both microscopic examination of a portion of the diseased tissue and the injection of a little of the same into a guinea-pig led to the pathologist pronouncing for tuberculosis. There was moreover nothing in the history to suggest syphilis, and the most complete examination failed to elicit anything pointing to a specific taint.

The patient was under treatment in all $4\frac{1}{2}$ months. For the first six weeks potassium iodide only was given; during this period considerable improvement in general health and relief to the painful deglutition was obtained, but objective examination showed the processes to be at a standstill. Accordingly for the next five weeks intra-muscular injections of calomel twice weekly were combined with the potassium iodide. After the fourth injection a marked improvement was noticed in the local processes. Owing to an attack of iodide acne all medical treatment was withheld for the next five weeks. During this time the improvement in things was still maintained, due probably to the action of the mercury still remaining in the muscles. During the next two weeks a second course of mercurial injections was undergone, with a result that except for a slight thickening of one vocal cord the larynx had a normal appearance, and the lesions in the palate and pharynx were fully healed.

It seems highly improbable that the above is only a case of spontaneous healing of a tuberculous process, both from the short time, only $4\frac{1}{2}$ months, in which a cure was arrived at and the beneficial results which so rapidly followed on the medicinal treatment.

The writer concludes by pointing out that in other departments of medicine, notably in dermatology and in ophthalmology, other observers have had the same experience in the treatment of tuberculous lesions as himself.

LINDLEY SEWELL.

Reviews.

"Medical Ethics." A Guide to Professional Conduct. By Robert Saundby, M.D. (Edin.), F.R.C.P. (Lond.). Second Edition; pp. 144. London: Charles Griffin & Co., Ltd., 1907. Price 10s. 6d. net.

The subject of medical ethics is of growing importance, and it would no doubt be a good thing if every medical student could receive instruction upon it as part of his ordinary curriculum. Meanwhile, the senior student or young practitioner will be well advised in reading and weighing the matter of this excellent little manual. It will help to smooth many a rough and difficult path in his practice. The advice given is essentially practical, being based upon decisions in actual cases which have been culled from the leading medical journals. The work is now brought up to date by the issue of this new and enlarged edition, which confirms its established position as a "guide to professional conduct." We would venture to hint that the price (10s. 6d. for a book of 144 pages) may be a possible bar to its wide sale and consequent usefulness.

"Movable Kidney and other Displacements and Malformations." By David Newman. Pp. 233. Longmans, Green & Co., 1907. Price 5s. net.

Whilst devoted mainly to the subject of movable kidney, this book includes also an account of other displacements and malformations of that organ.

The first chapter is devoted to the classification of the displacements of the kidney, and includes a very full account of the normal anatomy with special reference to the mechanism by which the gland is maintained in position. Of these means the author regards the peri-renal fascia as the most important. A careful and very complete account is given of the pathological changes which may accompany an unduly mobile organ. In his estimate of the probable causes the author does not award to pregnancy its usual prominent position, but considers that trauma has a greater influence than has been hitherto imagined. The symptoms of the disease are discussed at length, and the various types of gastric, urinary and neurasthenic symptoms are clearly illustrated by cases from the author's practice.

Various methods of nephroraphy are described, and the writer lays stress upon the fact that the only type of bond between the kidney and its surroundings which is likely to be successful is that which results from the organisation of granulation tissue.

The work contains many valuable hints on the type of case suitable for operative treatment, and the results of treatment are indicated in a series of cases from the author's practice.

The last section of the book contains a very complete and well-illustrated account of the bizarre shapes and dispositions sometimes shown by the kidney.

The whole of the book shows originality, and is well worth reading as the work of one who has made a special study of this branch of surgical work.

"Diseases of the Intestines and Peritoneum." By H. Nothnagel. Edited, with additions, by H. D. Rolleston. Second Edition; pp. 1059. W. B. Saunders Company, 1907. Price 21s. net.

We are glad to receive a copy of the second edition of this great work which may truly be described as authoritative. The English reading section of the profession is to be congratulated on possessing a translation of the late Dr. Nothnagel's work, and the translation is enhanced in value by the additions from the pen of Dr. Rolleston.

It is impossible to attempt any detailed account of the contents of this volume, but they will be found to represent the latest word in any department with which the work deals. As a work of reference it occupies a unique position.

A book of this kind must of necessity suffer repeated and frequent changes and additions to keep pace with the rapid advance in abdominal medicine, and in fact this present volume contains much that is indispensable to the surgeon no less than to the physician. We can recommend it to our readers as the most comprehensive work of reference on this subject which we possess.

"Proceedings of the Royal Society of Medicine." Vol. i., Nos. 1 and 2. Price 7s. 6d. net each number.

The Proceedings of the Royal Society of Medicine promise to be a very useful addition to medical literature. Each number contains the proceedings of the various sections of the Royal Society of Medicine, namely, the clinical, dermatological, electro-therapeutical, epidemiological, laryngological, medical, neurological, obstetrical and gynæcological, odontological, otological, pathological, surgical, therapeutical, and ptomacological sections. The paging of each section begins afresh in each of the nine numbers, which are to be issued annually, so that 11 separate volumes will form the result of the year's proceedings. This suggests a large addition to the number of books which a medical library ought to purchase, but with the issue of the "Proceedings" the "Transactions" of the affiliated societies will cease to be published.

Some very important papers appear in these first and second numbers of the Proceedings of the Royal Society of Medicine. Of these may be mentioned a long article by Dr. Newsholme on "Poverty and Disease, as illustrated by the course of Typhus Fever and Phthisis in Ireland"; a discussion on Pneumonia and its Complications; "The X-Ray Diagnosis of Renal and Ureteral Calculi," by Dr. G. H. Orton; "Medical Inspection in Schools: the Gloucestershire Scheme," by Dr. Coplaus; "A Contribution to the Study of the Relationship between Avian and Human Tuberculosis," by several writers; and "An Analysis of 274 Additional Cases of Removal of Goitre by Operation," by James Berry.

We hope to publish abstracts of some of these articles.

"An Index of Treatment." By various writers. Edited by Robert Hutchison, M.D., F.R.C.P., and H. Stansfield Collier, F.R.C.S. Bristol: John Wright & Co., 1907. Price 21s. net.

The present work certainly meets its intention of providing the practitioner with a complete guide to treatment in moderate compass and in a form convenient for reference. The publishers claim to have secured the co-operation of men of special experience in the treatment of the diseases which they write about, and we certainly think that they have chosen their contributors with excellent judgment. The book is very complete, inasmuch as it treats of medical, surgical, gynæcological and obstetrical complaints, with the exception of the management of labour whether complicated or uncomplicated. The whole is arranged, as its title suggests, in alphabetical order. We have been much interested with our study of the book, and have much pleasure in speaking of the soundness of the advice given in it, for the treatment which has stood the test of time and experience is that which is as a rule recommended. The general practitioner will find the work a most useful and valuable help to him in suggesting various means of modifying his treatment, not only in cases which he is accustomed to deal with, but which may not be improving as he would like, but also in guiding him in his management of the rarer ailments.

The surgery of the book has been treated specially with the view of helping the man in general practice. No attempt has been made to deal with the more elaborate operations which require special skill for their successful performance; but, on the other hand, non-operative treatment has been dealt with in detail, as well as have such minor or emergency operations as any practitioner may be called upon to perform.

We believe that the book, which is of handy size and convenient type, will meet a want and have a ready sale, and we unhesitatingly recommend it to the practitioner.

"On Treatment." By HARRY CAMPBELL, M.D., B.S., F.R.C.P. London: Ballière, Tindall and Cox, 1907. Price 5s. net.

IN taking up a book with this brief title one expects to find a conventional treatise on therapeutics, and it is with a feeling of satisfaction and relief that we discover the philosophical breadth of view which the author takes of his subject and the ability and charm with which he presents his by no means conventional opinions.

Dr. Campbell uses the word "treatment" in its widest possible sense, and in this volume discusses from a biological standpoint those wider questions of general therapeutics which are often lost sight of or perhaps even ignored by many practitioners of medicine. The chief lesson to be learnt from a perusal of these pages is that the treatment of a patient is a reaction between two personalities and not a mechanical process where all that has to be done is to put a diagnosis in the slot and pull out a cut-and-dried prescription.

Dr. Campbell is a keen critic of the defects of modern medical education, and even when differing from him we can appreciate his point of view, and the questions he raises are well worthy of serious consideration.

The first few chapters deal with the education and personality of the physician and his relation to his patient; incidentally some points bearing upon medical ethics are introduced and discussed. The general principles of therapeutics, its limitations and various systems of treatment are considered and followed by three chapters of great interest on psycho-therapeutics. Fresh air, clothing, exercise and rest as therapeutic agents receive due attention, and the last ten chapters are devoted to dietetic considerations, a field which Dr. Campbell has made peculiarly his own, and in these much of his previous work on diet is summarised. Drug treatment is hardly more than incidentally mentioned, and no attempt is made to describe the special therapeutics of individual diseases.

The whole book is written with a thorough grasp of biological principles; it takes a broad view of disease—or perhaps rather of diseased mankind—the bearings of the evolution of man upon the diseases to which he is subject are clearly brought out, and the duty of the physician in dealing with his patients as individual personalities is well laid down.

Every medical man would be the better practitioner for a perusal of Dr. Campbell's book, and we hope it will have a wide circulation.

93.

THE MEDICAL CHRONICLE.

A MONTHLY RECORD OF THE

Progress of Medical Science.

ON HYDROCELE IN CHILDREN.

By E. D. Telford, M.A., B.C. (Cantab.), F.R.C.S. (Eng.),
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Although much has been written of late years on the subject of hernia in childhood the allied subject of hydrocele has received but scant attention. This omission is the more remarkable in view of the intimate relationship between the two diseases. The subject of hydrocele in childhood is quite inseparable from that of hernia since both are conditions resulting from the delayed or incomplete closure of the processus vaginalis and, just as the study of hernia in children has contributed much to the "saccular theory" of hernia in adults, so it will be found that the study of hydrocele in children has many suggestive facts to offer in support of that theory.

With the rare exceptions of hydroceles consequent on traumatic orchitis or on hereditary syphilitic disease of the testicle the hydroceles of children are the result of imperfect closure of the processus vaginalis. This peritoneal process should be obliterated and reduced to a fibrous cord in the whole of its length save where its lowermost portion remains to form the tunica vaginalis of the testicle. The imperfect closure of the processus vaginalis renders the child the victim of a potential or actual hernia or hydrocele. Chance alone appears to determine the choice.

Should the peritoneal process remain open throughout and should its calibre be sufficient to allow of the descent of gut or omentum a hernia of the type unfortunately named congenital may result, but should the peritoneal process succeed in closing in its upper portion sufficiently to prevent the descent of viscera, then, equally, a hydrocele of congenital type is likely to result. This condition of congenital sac is rare in hernia and hydrocele

alike and does not exceed ten per cent. of all cases. Usually the tunica vaginalis testis is properly formed and the incompletely closed processus vaginalis above it may lead to either hernia or hydrocele of the funicular type. Finally, should the processus vaginalis be normally closed off above and below but remain open in the intermediate portion a hydrocele of the cord may result.

The terms congenital and funicular as applied to these sacs are time-honoured but unfortunate. It is more reasonable, as has been done in some recent literature on this subject, to replace the term congenital by total funicular. The funicular will then become partial funicular and the necessity for the term hydrocele of the cord will disappear, as this hydrocele is merely a variety of the partial funicular type.

The intimate relationship between hernia and hydrocele is shown clinically by their frequent association. It is quite common to find that the upper portion of the processus vaginalis has constituted a hernial sac whilst its lower portion has formed a hydrocele with or without the development of a normal tunica vaginalis of the testicle. Further, as the result of treatment by a truss, it occasionally happens that a hernia is converted into a hydrocele. A child is seen suffering from a hernia which reduces completely with a characteristic gurgle; a truss is fitted and within two or three weeks there is no longer any sign of hernia, but the scrotum is occupied by a large tense hydrocele.

Hydrocele is, like hernia, infinitely more common in male than in female children. In the last fifty cases which I have seen at the Manchester Children's Hospital there is only one instance of hydrocele in a female child. The hydrocele was bilateral in 14 instances, and of the remaining 36 single ones, 22 were on the right and 14 on the left side. There is always a greater tendency to imperfect closure of the processus vaginalis on the right side and a consideration of a large number of cases of unilateral hernia in children will show a proportion between right and left sides of almost exactly 2 : 1. In a series of 200 cases of unilateral hernia in children there were found 134 on the right and 66 on the left side.

I have endeavoured to ascertain the age of the child at

which the hydrocele was first seen. In 14 cases it was present at birth and in no less than 23 cases it was seen before the child was three months of age. No patient was older than three years.

The partial funicular type is by far the most common; the testicle can usually be felt quite distinctly apart from the swelling. The tenseness of the sac varies much in different cases; some are quite lax, others tense to the point of feeling solid. Theoretically a child's hydrocele should be reducible but practically it is very rarely possible to diminish the size of the swelling even by prolonged efforts at reduction. This may be due to the fact that the channel through the neck of the sac is long and very narrow and may easily be bent or twisted in an attempt at reduction of the fluid. In several of the cases, however, it has been quite impossible to demonstrate any communication between the hydrocele and the abdominal cavity after the sac has been laid open at the operation. That they do frequently communicate with the abdominal cavity is evident by the extent to which they vary in size and tenseness from day to day. This variation appears to depend on the amount of free fluid in the abdomen and this, again, is probably dependent on gastro-intestinal disturbances. An undue proportion of the subjects of hydrocele are wasting children with evident digestive disorders. The fluid in a hydrocele is occasionally due to other causes. I have notes of two cases in which boys, aged four and seven years, respectively, suddenly developed for the first time large left-sided hydroceles. Within three weeks ascites was obvious in each case and proved on laparotomy to be due to a diffuse tuberculous peritonitis.

The diagnosis of hydrocele presents no difficulty. It should, however, be remembered that the enteroceles of children are translucent in a strong light and in the strangulation of an infant's hernia the amount of fluid in the sac is often great. Cases of strangulation are indeed recorded where a diagnosis of hydrocele has been made, but the general condition of the child together with palpation of the structures emerging from the external abdominal ring should prevent any such mistake.

A hydrocele if left to itself will eventually undergo an

apparently complete cure and any evaporating lotion or other local application is the merest placebo. An apparent cure of the hydrocele by no means implies the radical closure of the processus vaginalis in every instance and we are left quite in the dark as to the exact condition of this structure. In some instances the case may, no doubt, be one of delayed but complete closure, but in others, and perhaps the majority, the delay means imperfection in the result. As the outcome of recent work in the "saccular theory of hernia" the delayed and imperfect closure of the processus vaginalis has acquired an importance previously unthought of. It affords a ready explanation of the increased incidence of hernia in early adult life and the great majority of such sacs will, on examination, yield plain and undoubted evidence of their funicular origin in the shape of a well defined fibrous band running from the fundus of the sac into the tissues of the spermatic cord. Most surgeons are now agreed as to the advisability of the operation for hernia about the end of the first year of life and if this position be accepted for hernia it must logically follow for hydrocele. The results of the early operation for hernia have been such as to place it amongst the most satisfactory procedures in surgery. The operation, if carried out in a series of hydroceles, will yield a further argument for its adoption. It will be found that in many cases a distinct funnel shaped process of unclosed peritoneum exists above the hydrocele. This funnel is a potential hernia and its proper obliteration is an essential part of the operation.

The operation for hydrocele is identical with that for hernia and, apart from such complications as may arise from the extreme delicacy of the parts, is a very simple one. It is always possible in infants to clear the sac well up to the internal abdominal ring without any division of the aponeurosis of the external oblique. The region of the internal ring and, in fact, the perivesical fat, or even the bladder itself, may be brought into view by traction on the cord and retraction of the external ring. Suture of the canal may be dispensed with. The canal is perfectly formed and may be confidently left to itself to work out its full development on normal lines.

MULTIPLE FURUNCULOSIS COMPLICATING TYPHOID FEVER.

By Frank E. Tylecote, M.D., D.P.H. (Vict.), M.R.C.P. (Lond.), *Senior Assistant Medical Officer, Plaistow Fever Hospital, London; Clinical Assistant, St. John's Hospital for Skin Diseases, London.*

Three forms of bedsore are described[1] in typhoid fever. Of these the first is undeniably entitled to be so termed, in that it is invariably the result of pressure, as is shown by its location and mode of development. The second form is not in any sense a bedsore; it is caused by irritation of urine or fæces about or near the natal region, and starts as a folliculitis, possibly going on to ulceration. Such a condition may occur in children who are in ordinary health, if cleanliness be neglected, and its relation to typhoid fever is purely adventitious. The third form, again, is not essentially a bedsore, although pressure effects may aggravate the lesions in certain places. It has the characters of a widespread furunculosis invading as readily those parts of the back and other regions not subjected to pressure as those which are.

A case of the last type has recently been under my care, and I record it because literature bearing on the condition is meagre, and the case presents some interesting features relative to pathology and treatment.

S. W., a girl, 13 years of age, was admitted to hospital on January 15th, 1908, suffering from typhoid fever. The history of illness dated from December 26th, 1907, when she vomited and complained on the following day of abdominal pain; ten days later she began to be delirious. On admission she presented typical signs of typhoid fever, with mental symptoms predominating. She was very irritable, and made a curious whining noise continuously. She lay on her side in bed with all the limbs in a position of extreme flexion, and resented strongly any attempt to disturb her for feeding or treatment, so much so that we had to resort to nasal feeding. Her facial

expression, mental state, and extremely emaciated condition pointed strongly to her being an epileptic imbecile, but the friends had stated that she had recently won a prize in a singing contest, was in a good position at her school, and had never had any fits. On January 19th, the Widal reaction gave a positive result with a dilution of 1 in 20. From the time of admission there was complete incontinence of urine.

On January 24th, there were seen on the lower part of the back and on the inner sides of the thighs several small, slightly turbid "urine blisters," which are recognised as occuring not uncommonly in typhoid patients who are incontinent, and which simulate in appearance a medium sized varicella vesicle of the second day, without any erythematous base. These blisters cleared up readily with careful nursing.

On the 28th, an eruption of an entirely different character was noticed. A large furuncle appeared over the spine of the left scapula, the skin over which quickly broke down; other lesions of a similar character appeared in rapid succession, extending over the entire back and hips, while one or two were also noticed on the front of the abdomen and several on the arms. The first of these lesions was the only one to break through the skin—probably owing to pressure. All the other lesions were easily located by palpation, deep in the subcutaneous tissue. As they became more superficial, definite fluctuation could be obtained; and although in the more superficial ones the skin over them was in some cases rather discoloured, in those which were not incised it never broke down. Altogether there were at least 50—60 of these abscesses, as many as twelve having been incised at one time. Cultures on agar were made from the pus, a platinum needle being plunged into the abscess at the time of opening. Although this procedure was repeated several times subsequently, no organism other than the staphylococcus pyogenes aureus was ever obtained, though careful search was made for the bacillus typhosus, both by cultural reactions and in films examined direct from the pus. On January 29th, when the first crop of furuncles appeared, the temperature ranged from 99° to 100·6°; on the 31st, it reached 100·4°. On the 4th February, the temperature being at about

the same level, a mixture was prescribed containing 15 gr. doses of calcium lactate, which had no marked effect in preventing the continued appearance of furuncles. The incised abscess cavities were irrigated with Wright's citrated saline solution. On February 8th, the temperature being at this time practically normal, but there being still no signs of the furuncular condition abating, it was decided to use anti-staphylococcic vaccine. The opsonic index was determined against the patient's own staphylococcus at ·47. As immediate treatment was necessary, I decided not to delay by the preparation of a special vaccine, but used a ·5 cc. dose of pure staphylococcic vaccine, prepared by the Lister Institute. No marked febrile reaction resulted. From the time of this injection no more fresh abscesses appeared, although those which had been recently incised, and a few which had not, as yet, been opened, showed no signs of clearing up. On March 1st, the opsonic index was determined as ·58, and a second dose—1 cc.—was given. Again there was no marked febrile reaction, but no fresh abscesses appeared, and those remaining now healed rapidly. On March 8th, a third dose—1 cc.—was given. The very few sores still remaining were almost healed, and two days later had entirely closed. Unfortunately, however, on the 9th inst., the temperature rapidly rose to 103°; pulmonary complications were feared, and a day later an extensive broncho-pneumonia could be made out. There was no expectoration, but on the 21st it was noticed that if the patient was disturbed a fit of coughing came on, the extremely offensive odour at the time of these attacks strongly suggesting pulmonary gangrene. Signs of extensive cavitation now appeared on the right side; on the afternoon of the 23rd patient vomited at 4-30; she immediately became extremely dyspnœic and pneumothorax was diagnosed; she sank rapidly and died at 7-40 the same night. The autopsy made the next morning entirely confirmed the diagnosis.

The main points of interest presented by this case are:—

1. *Its bacteriology.* It is plain from the case that the widespread form of furunculosis in typhoid may be referable to an infection quite apart from the primary disease, and that the typhoid bacillus is not an essential agent in its causation.

Abscesses occurring in association with typhoid[2] are usually stated to occur in defervescence and convalescence, often to yield pure culture of the bacillus typhosus, and commonly to resist all treatment for a very lengthened period. This case, on the contrary, occurred earlier—in the acute stage—was only associated with a pyogenic coccus, while the abscesses were much less resistant to treatment. The usual typhoid abscesses are of course, as a rule, single, or at most two or three in number.

2. *Its response to vaccine treatment.* It is an interesting point in this case that the primary infection, itself acute and severe, did not impair the efficacy of the vaccine treatment. Apparently if the unfortunate pulmonary complication had not occurred we should have had a very rapid convalescence not in any way protracted by the furunculosis. I attribute the rapid yielding of the severe furunculosis here met with to the form of treatment adopted, and the more so because this condition under other methods of treatment has often proved extremely obstinate. Its rapid cure may be regarded as an important point since it is often linked with emaciation and intense general debility.

3. *Its nursing interest.* It is necessary to clearly differentiate this condition starting as a pyogenic focus deep in the subcutaneous tissues,[1] and occurring in spite of the most careful nursing, from the more usual bed- or pressure-sore in which neglect plays so important a part; for, where the existence of the true condition is not recognised, those in charge of the patient may be unjustly held responsible for *so-called* pressure sores which the greatest care is powerless to avert.

As Osler states[3] that boils appear to be a more frequent *sequela* of typhoid when the bath treatment is carried out, it may be advisable to mention that this patient was not bathed.

Two statements of Murchison in his classical work on Continued Fevers are of interest in connection with the present case. The first[4] is that boils and abscesses have been sometimes noted among the *earliest* symptoms. The second, where, referring to prognosis, the following remarks appear under the sub-heading " Pyæmia " :—" I have met with many instances

in which during convalescence abscesses have formed beneath the skin in different parts of the body, and similar cases have been published by Louis, Forget, and Peacock. Many such cases recover. In rarer instances the pus is deposited in joints or in some of the[5] internal organs, and then the case usually terminates fatally."

I wish to thank Dr. Biernacki, Medical Superintendent of Plaistow Hospital, for permission to publish this case, and also to express my great indebtedness to my friend and colleague, Dr. J. G. Hare, Pathologist and Bacteriologist to St. John's Hospital for Skin Diseases, who carried out the determinations of the opsonic index.

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3. Osler, "Principles and Practice of Medicine," 6th edition, 1906, p. 76.
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SOME RECENT WORK ON NEPHRITIS.

Abstract by W. B. Warrington, M.D., F.R.C.P.

"Metabolism and Practical Medicine." Von Noorden. Vol. ii.: Pathology of Metabolism, 1907. Chapter on the Kidneys. Pp. 432—520.

"Nephritis." Von Noorden. John Wright and Co., 1905.

The influence of uncomplicated renal disease on metabolism is slight. It is the gastric and intestinal disturbances with vomiting and diarrhœa which entail an insufficient supply of nutriment, and von Noorden strongly warns against the monotonous milk diet often given in chronic renal cirrhosis as the cause of loss of appetite and malnutrition.

With regard to the proteid metabolism, von Noorden says that one cannot bring forward the slightest support for the view that the proteins of the body suffer either in renal cirrhosis or chronic parenchymatous nephritis, but he quotes one case which showed that during the uræmia of acute nephritis nitrogen may be lost from proteid decomposition.

The saliva may show the presence of urea and uric acid, and the sulphocyanide reaction may be absent. The HCl secretion of the stomach is usually normal. If there is diarrhœa the stools contain an excess of nitrogen as ammonia. The ethereal sulphates in the urine are in some cases increased, especially in renal cirrhosis. With regard to the total excretion of nitrogen in the urine, the following statements are made:—

1. It may be normal as in renal cirrhosis.

2. There may be nitrogen retention. In rare instances, but seldom to such an extent as to account for the nitrogen deficit, elimination may take place through the skin or lungs.

3. More nitrogen may be present in the urine than is ingested. This occurs as the perviousness of the kidneys increases.

In chronic renal cirrhosis there may be nitrogen retention for many days; it may be retained without uræmia, though

usually during uræmia there is nitrogen retention. Bartels showed that uræmic convulsions sometimes occur when œdema is diminishing, *i.e.*, during the passage of nitrogenous extractives to the blood. Nitrogen elimination increases with diuresis, but the reverse is not necessarily true. The nitrogen equilibrium with changes in diet is established more slowly than normal. In cirrhosis the intake of water may be limited to 1½ litres without any diminution in the nitrogen output, but the characteristic feature of the nitrogen excretion is its eccentric and unaccountable variation.

In contradistinction to the diet in cirrhosis von Noorden in acute and dangerous cases has often given with advantage an exclusive diet for from 3 to 8 days, of 200—300 grammes of glucose flavoured with fruit juice.

Retention of nitrogen means urea retention. The amido-acids and ammonia are increased as the result of inanition. It is important to notice that uric acid, creatinin and all the purin bases are easily excreted, whereas in gout these may be retained.

Both the excretion of nitrogenous and inorganic substances in Bright's disease show marked variations from the normal, but it is only as regards the excretion of water that any definite rules can be enunciated.

In acute nephritis it is only the incapacity of the kidneys which is responsible for the diminution in diuresis. This is especially obvious in scarlatinal nephritis, where the primary seat of the lesion is glomerular; it is therefore quite useless to give the patient large quantities of fluid in order to "wash out the kidneys.

In hæmorrhagic nephritis, a sequel to acute infectious disease, there may be a much more obvious reaction to the water intake. Defective adjustment of the kidneys to a varying water supply is very characteristic of acute nephritis.

In parenchymatous nephritis the conditions are very different. If the amount of water is not limited intentionally there is œdema. If larger quantities of water are given the increase of diuresis and decrease of molecular concentration are subnormal, and water merely increases the œdema. In rarer cases dropsy may persist even with a free diuresis. Where the diuresis

corresponds to the fluid intake we have to do with transition cases on the way to interstitial nephritis. The freezing point of the urine does not rise with the intake of water, and does not fall with the introduction of NaCl to the dietary.

The cirrhotic kidney if 'compensated' behaves like that of a healthy person. It has been stated that the cirrhotic kidney is incapable of secreting a sufficiently concentrated urine. Von Noorden dissents from this view. He considers that every patient with renal cirrhosis suffers from thirst, and hence there is polydipsia; with the aid of an hypertrophied heart water is freely excreted, but in spite of this polyuria the ability to get rid of solid substances may be diminished, but if reasonable restrictions are put on the fluid intake (for other reasons a wise measure) the amount of urine diminishes, the specific gravity and molecular concentration increase, and the total output of solid is scarcely altered. Renal cirrhosis is, however, the proteus amongst diseases—no one case wholly resembles any other.

The results of cryoscopy and electrical conductivity are discussed, but von Noorden considers that the hopes aroused by Dreser's and Koranyi's admirable work have vanished in a few years. The specific gravity is proportional to the amount of all the solid constituents. After the precipitation of albumen the specific gravity gives the same results as cryoscopy which determines the presence of all molecules in true solution (exclusive of albumen). In consequence of the uniform relations which exist between the number of dissolved molecules in a solution and the freezing point, the latter affords a convenient test for its molecular constitution. If this is increased the condition is termed hypersthenuria and if lowered hyposthenuria.

An example illustrates the method of using cryoscopic determinations:—

Quantity of urine = 1,500 c.c.
The lowering the freezing point $\Delta = 1{\cdot}4$.
Valency = (1,500 × 1·4) = 2,100 c.c.
NaCl equivalent $\frac{2100}{61{\cdot}3.} = 34{\cdot}2$ grammes.
NaCl in urine = 10·8 grm.
NaCl of other dissolved constituents = 34·2 − 10·8 = 23·4.

It has, however, been found that the valency value will be considerably higher in dilute than in concentrated urine, and for this reason Zangemeister suggests that the urine be diluted 10 to 15 times.

It remains to be seen whether the cryoscopic value of urine secreted by the right and left kidneys respectively possesses any practical importance.

Von Noorden makes some important observations with regard to the excretion of salts. NaCl is secreted by the glomeruli, phosphates by the tubules. In Bright's disease NaCl secretion is often normal, but there may be some delay in establishing equilibrium. The secretion is more variable than in health. As the result of previous retention NaCl output may be in excess of the intake. In unilateral disease the urine on that side is frequently poorer in NaCl than that of the healthy kidney. Retention of NaCl is only to be accepted with caution, and only when there is considerable NaCl in the food. It generally runs parallel to nitrogen excretion, and occurs in very grave forms of renal disease.

The sodium chloride question has become of special importance because of its close association with the presence of œdema. It must be remembered that pure water does not enter the tissues as such; it always contains organic and inorganic substances in solution; hence with œdema there must be a retention of such substances, and *vice versâ*. (1) The retention of water may be primary, either due to incapacity of the kidneys, weakness of the circulation, abnormal perviousness of the vessels or attraction of water by the tissues. The water thus retained requires NaCl in order to balance the osmotic pressure of the blood. Hence the output of NaCl is diminished. (2) The NaCl deposit in the tissues may be primary, and water follows. There may be a chemical alteration in the tissues themselves, or there may be a functional incapacity of the kidneys. Widal and Strauss would regard this as the key to the whole problem of œdema. Marie's hypothesis is that there is a chlorure fixé in which NaCl is chemically fixed by the tissues themselves; it occurs in the preliminary stages of œdema, and persists even after the diuresis is set up; but after the tissues are saturated the chlorides

accumulate in the tissue fluids, attract water and set up œdema. This is chlorure libre.

Under the section on albuminuria it is stated that recent biochemical reactions have shown the occasional presence in the urine of egg-albumin, milk, and beef-albumin. These occur only in very small quantities. Generally serum albumin and serum globulin are present. The albumins are mainly excreted by the glomeruli, and the elimination of the albumin runs parallel with that of the other substances they excrete.

The acetic acid precipitates in diluted urines are generally attributed to nucleo-albumin. Such precipitates are frequent in fevers, heart disease, jaundice and parenchymatous nephritis. These are still more frequent in 'cyclic' albuminuria, and probably the condition described as 'orthostatic albuminuria' and the albuminuria of puberty belong to the same category. Von Noorden says that where this body exists in large quantities true nephritis does not exist.

Various theories have been put forward to explain the albuminuria of adolescence—increased perviousness of the kidneys (Leube), irritability if the kidneys (Senator). Von Noorden thinks that there may be a chemical alteration of the blood proteins, and he calls the condition diabetes albuminosus. Some attribute it to low blood pressure, and Wright and Ross have observed a diminution in the coagulability of the blood, which factor, together with increased hydrostatic pressure in the renal capillaries, often brought about by nervous disturbances, active exercise and the assumption of the erect posture, dispose to transudation of lymph; they treat the condition with calcium lactate.

Albuminuria has not much effect on metabolism if the diet contains sufficient nitrogen. Von Noorden warns against too low nitrogen diet except in acute conditions; in chronic cases intermittent periods of low diet may be given.

The thesis that the degree of albuminuria affords a test of the severity of the disease is only partially true. In cirrhosis there is extreme variation of the secretion of albumin, and its degree is in no way influenced by the protein intake. There is no difference in the therapeutic value of red or white meat, or fish

dietary. Müller suggests that increase in the protein intake may lead to increased blood pressure, but one should remember that the rise in blood-pressure is a compensatory change. The causes of the increase in blood-pressure and not the rise itself should be combated. It has been said that the NaCl retention is the cause, but in acute nephritis a rise in blood-pressure sets in very early before retention of NaCl has taken place. An attempt has been made to estimate renal incapacity by the time of appearance of foreign substances in the urine; those used have been iodine, salicin, and methylene blue. Von Noorden does not think the tests are of much value.

Important changes in the blood are present in nephritis; hydræmia, *i.e.*, dilution of the plasma, so that the sp. gr.= 1018–1022, instead of 1027–1032, is often met with, always with persistent œdema, but it is absent in acute nephritis when this is not accompanied by thirst. It is nearly always present in parenchymatous nephritis and lardaceous disease. In granular kidney neither anæmia or hydræmia are present so long as there is compensation.

Alkalinity of the blood is diminished in uræmia, and bodies belonging to the β-oxybutyric acid series accumulate. The non-protein nitrogen is represented by urea which equals half to four-fifths of the total nitrogen. The nitrogen extractives of the tissue fluids correspond with the non-protein nitrogen of the serum, but uræmia is not dependent on the amount. The figures may be low when there is uræmia, and *vice versâ*. Still it cannot be doubted that the accumulation of nitrogenous products of metabolism occupies an important position amongst those phenomena which are the results of renal incapacity. Unfortunately there is not yet any simple relation between the nitrogen 'balance' and the amount of nitrogen of non-protein nature in the tissue fluids. Uric acid, ammonia and creatin are also usually increased.

NaCl retention has been considered as the cause both of uræmia (Bohne) and of œdematous fluid (Widal), but von Noorden doubts both these statements. The cryoscopy of the blood promises more valuable results than the cryoscopic deter-

minations of the urine. Freezing point $\delta = -63$ is always a sign of incapacity of the kidneys, and in uræmia values of -70 to -75 have been found.

The toxicity of the blood serum is frequently above the normal, and some interesting results are quoted with regard to nephrolysine, the specific toxin produced in the serum of animals by the injection of kidney cell juice. Von Noorden regards these investigations as full of promise for the future.

The section on uræmia shows how critical judgment disposes of many of the views now held, but von Noorden thinks that the theory of the internal secretion of the kidneys and the investigations with nephrolysine may yield in the future valuable results.

There is an interesting section on the genesis of œdema. Some of the views put forward have already been mentioned. Von Noorden thinks they lose sight of the simple position that in nephritis the excretion of water is insufficient, and hence accumulates in the tissues.

It is true that renal œdema differs from cardiac dropsy; the blood is more hydræmic; yet hydræmia may be present without dropsy. Some hydræmia must, however, be present before water can accumulate. In these cases the action of the kidneys is too slow. The osmotic pressure of the blood has to be maintained, and the superfluous water is therefore transferred to the tissues. This mechanical factor certainly operates in cardiac dropsy, and may explain the œdema of acute nephritis when there is no hydræmia. As the disease progresses the blood suffers from excess of water derived from the intestinal canal and tissues and incompletely excreted. Hypalbuminæmia is also present, and accounts for some symptoms. In other cases it seems that toxic substances are retained or formed in the body which increase the attractive capacity of the blood, and especially of the tissues, for water. Such substances increase the perviousness of the capillaries, as, for example, the toxic œdema of morphia and iodide of potassium. The action of lymphagogic substances also proves the correctness of this view, and they have been shown to be present in the blood serum of renal patients.

"Diseases of Metabolism and Nutrition—Nephritis." Von Noorden. John Wright and Co. (Bristol).

THIS little book is an excellent companion to the more detailed information given in the pathology of metabolism, and gives von Noorden's view on the treatment of nephritis.

The therapeutics of renal disease is a protective therapy, an attempt to spare the organ as much as possible, but the excretory function can only be reduced to a certain extent. In acute disease the protective principle can be carried further than in chronic disease.

The first question is, How are we to know whether or not this or that diet really spares the kidney? The second, What is the significance of albuminuria? And the third, What is the excretory capacity of the kidney? It has first to be established what are those end products which are eliminated with difficulty.

In acute diseases of the kidney, in recent parenchymatous nephritis and in the rarer acute hæmorrhagic nephritis supervening on chronic granular kidney, von Noorden gives the following list:—

Excreted with difficulty:

- Urea.
- Creatinin.
- Pigments.
- Hippuric acid.
- Phosphates.
- Inorganic sulphates.
- Water.

Are well excreted:

- Uric acid.
- Xanthin bases.
- Ammonia.
- Aromatic substances.
- Amido acids.
- Chlorides.
- Carbonates.
- Water.

In the acute stages water is eliminated with difficulty, and should be avoided. Creatin is present only in meat extracts,

meat broths, etc. It is absent in milk, vegetables and eggs. With regard to pigments, it can only be said that we should omit articles of diet containing hæmoglobin. Phosphoric acid is present in large quantities in many articles of diet, and hence it is difficult to exclude, but if calcium carbonate be given it unites with the phosphoric acid and a large amount is excreted by the bowel. A little carbonate of calcium should be added to milk for this reason.

Urea and sulphates are considered together, since both of them are derived from the protein molecule. It is permissible in a healthy man to reduce the proteid intake for a short time without injury to health; thus from 112 to 60 gr. per diem for two or three weeks. Now 60 gr. of protein are contained in about 6 to 7 quarter litres of good milk, but in nephritis often as much as 3 litres are given (= 110—120 gr. protein), yielding an amount of urea = 30—35 gr. which the kidneys are incapable of excreting. Milk therefore is not quite innocent. Von Noorden rarely gives over $^3/_2$ litres a day, and adds to it cream—1,500 cb.c. of milk and $\frac{3}{8}$ litre cream contain 55 gr. protein, 70 gr. milk-sugar, 165 gr. fat, yielding an energy value of about 2,000 calories

If the patients are very much reduced, soups, porridge or pudding made of amylaceous material, *e.g.*, oatmeal, flour, groats, maizena, with the addition of butter, sugar and fruit syrup may be given.

Now in *acute* nephritis when diuresis sets in the eliminative power of the kidney is rapidly approaching normal and proteins may be gradually increased. As long as any trace of nephritis remains not more than 100—110 gr. of protein should be given. Green vegetables, fruit containing kernels, and cranberries contain the benzoic esters and should be avoided. Pears, apples, raspberries and grapes may, on the other hand, be given.

Acetic acid, in vinegar, is often said to be harmful in nephritis, lithiasis and bladder trouble, but von Noorden allows it. Uric acid and the xanthin bases are well excreted, but they may be toxic and occasionally their elimination is retarded and it is advisable to avoid such substances as thymus, liver, spleen, kidney, and strong meat broths, *i.e.*, animal tissues containing

nuclei. In muscle meat the quantities are so small that we are not justified in forbidding the use of meat on these grounds.

Alcohol irritates the kidneys directly. There is in health a harmless zone which is considerably narrowed in disease. In acute and chronic nephritis when there is a small and thready pulse von Noorden gives small and repeated doses in concentrated form. Alcohol also not infrequently stimulates the appetite and moderates the nausea.

Water is very badly excreted by the kidneys when they are acutely diseased and its limitation seems indicated in cases where the kidneys refuse to excrete it, *i.e.*, where diuresis is not increased; in such cases it only serves to augment the œdema and hydræmia and must be regarded as a constant source of irritation to the kidneys. In such cases von Noorden reduces the quantity of fluid and food to the smallest possible amount; some patients may even stand total abstinence from food for a few days, as a matter of fact patients with severe nephritis absorb very little of their nutriment. Diaphoresis is of value in these cases: it withdraws water from the blood and tissues. It is doubtful whether poisonous substances are excreted by the skin. It is useless to cause patients to sweat and, at the same time, allow them large quantities of water to drink. The amount of water ingested must, however, not be less than $1\frac{1}{2}$ to $1\frac{3}{4}$ litres. When, however, diuresis is marked from the onset or spontaneously occurs then the amount of water need not be diminished, and it is also during these stages that the 'flushing out' action of water is useful.

Diuretics are contra-indicated in the early oliguric period of acute nephritis. During convalescence from acute disease, in addition to the articles mentioned, small amounts of fresh cream cheese, some fruits, particularly grapes, and small amounts of eggs and meat should be added.

In subchronic nephritis with free diuresis but still some œdema von Noorden recommends the climate of Egypt.

Contracted kidney. The great error is to apply principles that are correct in the treatment of acute nephritis to the treatment of contracted kidney. The essential postulates in this condition are to protect the kidney from noxious influences.

strengthen the whole organism, spare the heart and strengthen the heart muscles. The psychic treatment too is of importance, and these patients are apt to be depressed by gloomy thoughts. There are three groups of cases: (1) the 'compensated kidney,' where the excretion of urinary products is not greatly interfered with, (2) the acute exacerbation, when the treatment resembles that of acute nephritis, (3) the hopeless cases, when the desires and tastes of the patient should be met as far as possible.

Alcohol: von Noorden urges in general total abstinence. The transitory use is indicated when there is lack of appetite and disturbance of the heart. Stenocardiac attacks are especially amenable to treatment. Half a bottle of champagne in the evening may prevent the nightly appearance of attacks of uræmic cardiac asthma, but the patient should be forbidden to use alcohol as a table beverage. Alcohol threatens the heart and the walls of the blood vessels.

Condiments. Spices, pepper, ginger, mustard, etc., are harmful, but salt, vinegar and lemon juice may be taken. Radish in one instance produced hæmaturia; celery increases the albuminuria. Asparagus in small quantities is permitted, but leek, garlic, mushrooms, sorrel and truffles are forbidden.

Drugs. Cantharidis, copaiva, turpentine, salicylic acid, carbolic acid, resorcin, hydroquinon, lead, copper, uric acid, silver, mercury and their salts, iodoform and other preparations may be dangerous. It is to be remembered that drugs are very slowly excreted. Drugs like digitalis, caffein, diuretin, camphor, scilla may be used if soon successful, but if not, it is no use pushing them for harm only will be done from the endeavour to force a favourable result.

Coffee, tea and tobacco are injurious irritants and must be permitted only with great caution; the heart is vastly more sensitive to such irritants than in health. Careful observation must be made to show what effects such substances have on the frequency of the pulse, the intensity of the cardiac impulse and upon subjective sensations.

Meat. Strong broth and extractives should be forbidden, but a wide choice allowed in wholesome flesh proteid food. Von Noorden speaks against lowering the nitrogen value of the

food. The urinary nitrogen should not fall below 12 gr. which requires about 85 gr. of proteid allowing for the loss through the fæces. He considers that a low proteid diet prolonged for months or years exercises a harmful influence upon nephritis patients. The old idea that red meat is harmful has received no substantiation from von Noorden's experiments.

Allowance of water. Von Noorden deprecates the giving of large amounts of water to these cases. The flooding of the vascular system overtaxes the heart to an extraordinary degree. Restriction of water, on the other hand, often leads to permanent improvement. It may save life. The fluid should be limited to $1\frac{1}{4}$ litres, both in earlier and later periods of the disease (the amount of water contained in the solid food, about 500—700 c.c., is ignored). On one day a week von Noorden allows the patient to drink as much as he pleases.

Obesity is a grave complication alike in Bright's and in heart disease, and a reduction cure should be decided upon sooner than in healthy persons with a like adiposis. The 'cure' should be gradual not rapid. The diet should be limited to $^4/_5$ of that required to keep the patient in *statu quo*; only rarely should one proceed to a $^3/_5$th diet.

With regard to physical treatment, von Noorden recommends cold rubs or lukewarm sitz baths, followed by a brisk rub and cooling the water 3 or 4 degrees during the bath; brine baths of 30—32 degrees with the addition of pine needle extract to stimulate the skin. He considers the carbonated baths of Nauheim, Homburg, Kissingen, Soden and Schwalbach of much value in early cases.

Muscular exercise should not be given up except in the terminal stages of the disease.

Critical Review.

By J. W. W. Stephens, M.D., D.P.H., School of Tropical Medicine, University of Liverpool.

"Fevers in the Tropics." With 11 plates, 7 illustrations in text, 82 temperature charts, 32 tables. (Oxford Medical Publications, 1908.) Price 30s. net. By Leonard Rogers, M.D., F.R.C.S.

This is a work of over 300 pages devoted mainly to the fevers of India. Its two most distinctive features, perhaps, are the minuteness with which the temperature charts, all of which are original, are studied, and the importance which the author rightly attributes to hæmatological investigations. It is on this latter point that we may venture to offer some criticism.

Professor Rogers's experience, as this book testifies, is very large, and in venturing to differ from him we do so in the hope that the subject may be elucidated. In describing the technique of the examination of the blood the author makes the following statement: "As lymphocytes shade off through intermediate forms into large mononuclears it is necessary to lay down some artificial line of division between them although the intermediate forms are as a rule few in number. I prefer the simple one of size and only count as large mononuclears those which are fully as large or larger than an average polynuclear, while all smaller ones are classed as lymphocytes" (p. 20).

Here we have a statement over which it is very necessary to pause, for leaving aside the question as to its correctness, which we shall consider later, it is evident that the author is defining his mononuclears in a way which we believe is not that in general use, and consequently when the author says that mononuclears are increased in such and such a disease he is including in that category cells which other people do not. Such a practice must lead to confusion and when his figures are quoted as to a "mononuclear" increase in any disease it will

be absolutely necessary always to add the author's definition of a mononuclear. It perhaps will not be out of place here to consider then the questions: (1) What is a lymphocyte? (2) What is a large mononuclear leucocyte? Lymphocytes are not all of the same size. For convenience sake even if it is not certain that the division corresponds to fact we may call them young and old. The young lymphocyte is about the size of a red cell, *i.e.*, 7·5 μ. The nucleus is round or oval, or slightly incurved and fills almost the whole cell so that the surrounding layer of protoplasm is very narrow. It stains deeply, and, according to Naegeli, with strong heat fixation and methylene blue staining, 1 or 2 nucleoli are always visible. Such cells are easily recognised, but the difficulty commences when we consider the next form. The old lymphocyte is larger than the young form. This in part may be due to age, or in part the appearance may be due to the spreading of the film. In fact, in the process of spreading, a leucocyte may be flattened out to twice its original size or even more. So that for this reason alone, if we take 7·5 μ as the average size of a lymphocyte, in thin films where the leucocytes have been subjected to pressure such a lymphocyte may now measure 15 μ, *i.e.*, greater than an unflattened polynuclear leucocyte (10—12 μ). That this actually occurs can be seen by comparing the size of lymphocytes in a thick and thin film or in thick and thin portions of the same film. That this source of error occurs in the author's counts (and indeed in all counts if the fact is not appreciated) we believe is shewn by the diagrams on p. 14 of the distribution of leucocytes in a film where the position where lymphocytes are in excess is placed in the unflattened portion of the film, viz., at its commencement. We do not believe that there are any more here than elsewhere, but that especially along the edges and terminal points they have been flattened and are wrongly counted as mononuclears.

It is these larger, older, or in other cases simply flattened lymphocytes which are not always easy to distinguish from large mononuclears, but that is no reason for believing that all transitions occur between lymphocytes and large mononuclears. The " older " lymphocyte, however, has still the characters of

the "young" lymphocyte though it must be admitted that the appearances are lost somewhat in excessively flattened cells, but apart from this the characters as given above are distinct from those of the next cell.

The large mononuclears, 12·20 μ. These again are very liable to compression so that this size may be exceeded; but the nucleus is distinctive. It stains feebly. It has a plump appearance, its contour is irregular (not oval or round) owing to incurvings, and the protoplasm is broad. It is in fact the largest cell in the blood, with a large nucleus and a large amount of protoplasm. Nucleoli are generally absent, though Naegeli again states that with good triacid staining the cell shews a fine neutrophil granulation, a point, however, which has not been so far confirmed. We believe then with most others that these two kinds of leucocytes are distinct and that transitions between them do not occur, yet it is possible the author might quote others of his view (? Da Costa); anyhow it is absolutely necessary as stated above to point out what the author means by a mononuclear, as Major Rogers in fact does; and not only this but if the author is quoted, it will be necessary to state always that his definition of a mononuclear is his own and is divergent from that generally accepted.

We have ventured therefore to differ from the author on this matter, and indeed we should much like to see this ever-recurring question of the large mononuclear—which is the despair of many a budding hæmatologist—thoroughly thrashed out. Another point in which the author's practice differs from that in general use is in the mode of counting and number of leucocytes counted. Here, again, we think the general practice is to count at least 500 and not infrequently 1,000 cells with the oil immersion, but the author counts with a $\frac{1}{8}$ inch lens and states that a count of even 125 in Kala-azar—where there is leucopenia—will only give an error of 2 per cent. We certainly think that the oil immersion should be used, as the characteristics of the nucleus can hardly be otherwise adequately appreciated; but we would perhaps go so far as to say that the 500 or 1,000 usually counted may be a superfluity of exactness. We think, however, on the whole that we are

justified in considering as doubtful some of the author's premises in these matters, and, indeed, finally, in our opinion, in Plate 2 there are not figured any large mononuclears at all but simply old or flattened lymphocytes. We have dwelt on this subject at some length because this divergence of opinion must invalidate comparisons between the leucocyte counts of Prof. Rogers and those of other authors.

One word further of criticism before coming to the main subject of the treatise. Some of the plates are hardly worthy of the text. For instance, Plate 2 of normal blood, Plate 8 with a curious-looking tsetse-fly and a misprint Gambienae for Gambiense in the letter-press, Plate 9 not worthy of the dignity of a plate and with inadequate description, Plate 10 with the larval Anopheline with its palmate hairs below instead of indenting the surface film.

The subjects dealt with by the author in fifteen chapters comprise kala-azar, trypanosomiasis, typhoid and paratyphoid fevers, relapsing fevers, malta fever, the pre-suppurative stage of amœbic hepatitis, epidemic dropsy, unclassified fevers, malarial fevers, dengue, plague, yellow fever, heatstroke, seven day fever, three day fever and a few others.

The author contributes a valuable chapter on the question of heatstroke and adduces many new and original statistics which he has compiled and which, in his opinion, completely dispose of the fantastic view that heatstroke (the hyperpyrexial form) is a specific disease. " The statement ' that heatstroke cases occur quite capriciously and that they are independent of the temperature conditions ' is thus seen to be totally untrue as regards the prevalence of the disease in India."

The chapter which in our opinion is one of the most valuable from the practical standpoint is that on " The pre-suppurative stage of amœbic hepatitis." These cases constitute a distinct class of fevers usually of a chronic intermittent type sometimes with no very definite symptoms of hepatitis and rarely with any dysentery. There is a moderate degree of leucocytosis in which the proportion of mononuclears is normal or only slightly in excess. The real practical point, however, is that this kind of fever yields rapidly to large doses of ipecacuanha in the

absence of symptoms of dysentery or even of hepatitis, and the formation of tropical abscess of the liver is thus prevented. If the author's views can be maintained, as time will soon shew, then many a European in the tropics will be saved from an untimely death from liver abscess following upon obscure fever on which quinine had no action. It should be noted that the author considers ipecacuanha as a specific in the treatment of amœbic dysentery, while other authors, for instance, Strong in the Philippines, considers that it is not in any sense curative. It is much to be desired that these conflicting statements about the value of ipecacuanha should be settled in one direction or another.

The description of Kala-azar—a subject which the author has almost made his own—is though unduly long, excellent. We think, however, it is somewhat hasty to accept the transmission by bed-bugs as proved. Patton's views may be quite correct but they certainly require confirmation before the matter can be considered as settled. In his discussion of the value of the endemic index in estimating malaria, the author states that he has found that the number of children under 10 infected (*i.e.*, malarial index) may be 0 while an adult population may shew a "great majority" with parasites in their blood. This is a condition of things which it is almost impossible to conceive, and it would appear as if there must be some error somewhere.

The book is well got up, the type good and the different features of a disease well arranged under distinct headings, so that the text is easy to read and to consult. The author deserves hearty congratulations for the immense amount of labour that the mass of data represent, and for his bold attempt to reduce the chaos of Indian fevers to some order. We trust that Prof. Rogers in future editions will still further attack the position so long held in India by that blessed word "fever," so beloved of the layman, and, publish it not abroad, by not a few medical men!

CHRONICLE.

Medicine.

Blood in Rheumatoid Arthritis.

BULLMORE (H. H.) and WATERHOUSE (R.). *Edin. Med. Journ.*, 1907, p. 523.

ANÆMIA is almost always present in rheumatoid arthritis. There is, as a rule, a slight diminution (to between 75 and 95 per cent.) in the number of the red blood corpuscles, and a slightly greater diminution to between 70 and 90 per cent. in the amount of hæmoglobin. In the great majority of cases the leucocytes are not increased in number, and the normal proportions of the different varieties to one another are preserved. Myelocytes in small numbers are present in a few cases only.

E. N. CUNLIFFE.

Acute Lymphatic Leucæmia clinically suggesting a myelogenous origin.

SABEL (S. O.) and SATTERLEE (G. R.). *New York Med. Journ.*, 1907, p. 1128.

AT present there are two schools of diverse opinion regarding the origin of leucæmia. Ehrlich and his followers hold that there are two forms of the disease, distinct in origin: (*a*) Lymphatic, due to primary disease of the lymph glands; (*b*) myelogenous, due to primary disease of the bone marrow. They believe that the lymphocytes of the first form and the myelocytes of the second form are totally distinct, and that is is not possible for the cells nor the disease of the one form to be changed into those of the other. Neumann and others are of opinion that the bone marrow is the birthplace, pathologically, of all cases of leucæmia, lymphatic and myelogenous. The case, reported by the authors at some length, presents a blood picture, which is usually described as typical of acute lymphatic leucæmia, myelocytes being extremely scanty and the large lymphocytes enormously increased. Clinically, however, the case suggested myelogenous leucæmia. Only one lymphatic gland became enlarged, whilst on the other hand, a distinct enlargement of the spleen was accompanied by tenderness of that organ and of the long bones. Unfortunately no autopsy was permitted.

E. N. CUNLIFFE.

Cases Illustrating the more unusual Complications of Pneumonia.

Clarke (J. M.). *Bristol Med. Chir. Journ.*, 1907, p. 109.
In one hundred and twenty-six consecutive cases of pneumonia observed by the writer peritonitis occurred twice, thrombosis of vessels three times (in one of these there was also general pneumococcic infection); endocarditis twice, nephritis once and arthritis once. Empyemata occurred three times and in one case difficulty in diagnosis was met with owing to the fact that a firm band of adhesions, between the visceral and parietal pleuræ along the line of the interlobar septum, separated a localised collection of pus situated over the middle lobe from another collection at the right base. Three cases of imperfect resolution were met with. Valuable aid is given in diagnosis of this condition owing to the fact that the consolidated area corresponds exactly to the superficial delimitation of one lobe of a lung on the surface of the chest. The two cases of peritonitis were interesting in that they occurred in two sisters. It seems probable that this complication is a result of general pneumococcic infection rather than due to direct extension. In both cases of pneumococcic endocarditis the heart valves showed evidences of old rheumatic changes. The thrombotic cases were somewhat unusual in that in one case only was the usual vessel, namely the femoral vein, involved; in the other cases the cerebral vessels and the brachial veins were respectively involved.

E. N. Cunliffe.

Hæmolysis: Intra and Extra-Vascular Duration of Life of the Red Cells.

Froin (M. G.). *Gaz. des Hôpitaux*, Nov. 12, 1907.
The author makes an ingenious attempt to solve the question of the duration of life of the red cells. He first argues that formation of bilirubin from hæmoglobin takes place not in the liver, due to the activity of the hepatic cells, but in the blood stream due to leucocytic activity. Gilbert and Herscher have shown that blood serum normally contains a definite though small quantity of bilirubin, sufficient to give it a slightly yellow colour. Normal cerebro-spinal fluid is colourless, but in cases of hæmorrhage from the meninges it may acquire a faint yellow colour similar to that of the blood serum. The author argues that it is reasonable to suppose that the destruction of the same number of red cells will be necessary to produce yellow colours of the same tint in equal quantities of blood serum and cerebro-spinal fluid. He has determined the number of red cells that have to be destroyed, in order to tinge the cerebro-spinal fluid to exactly the same extent as that which is normally found in

blood serum. On the basis of these arguments, he calculates that 25,000,000 millions of red cells are destroyed in the course of a year. This would give the average duration of life of a red blood cell as 24 to 60 weeks, which is twelve times the duration calculated by Quincke.

E. N. CUNLIFFE.

Pancreatitis with gallstones. The Pancreatic-biliary Syndrome. Acute Pancreatitis, Steatosis and Hæmorrhage in the pancreas and peritoneal cavity.

DIEULAFOY. *La Presse Méd.*, October 15, 1907.

CHRONIC PANCREATITIS. Two forms may be recognized, the chronic hypertrophic pancreatitis and the chronic stenosing pancreatitis. In both cases narrowing of the bile duct occurs. The condition is nearly always associated with gall-stones, although the advent of chronic pancreatitis may succeed at some interval after the expulsion of a gall-stone. It is possible that both the gall-stones and the pancreatitis are due to an infection ascending from the duodenum.

Symptoms and diagnosis. There is frequently a history of biliary colic. The onset of pancreatitis is usually gradual and somewhat indefinite. Pain at the "pancreatic point," persistent jaundice and loss of weight are not diagnostic. The sclerosed pancreas may form a definite tumour, but this is likely to be mistaken for cancer of the pancreas and *vice versa*. Cammidge's reaction and glycosuria are both unreliable. The microscopic examination of the fæces forms the most reliable sign. Increase of fats in the stools and the presence of striated muscular fibres are noted in both occlusion of the bile duct and of the pancreatic duct. In the latter case, however, acid fats and soaps are absent, merely neutral fats being present.

Treatment. Surgical interference is indicated. If the hepatic duct is drained and the bile diverted for a time, the pancreatic sclerosis disappears and the bile duct becomes permeable again.

ACUTE PANCREATITIS. The sudden onset of the symptoms suggest an acute abdominal disaster, and diagnosis is frequently not made till the abdomen is opened and patches of steatosis and hæmorrhage are found scattered through the pancreas and the peritoneal cavity. The white patches of fatty tissue are found to consist of altered fat cells. The cells are dead and the normal fat has been converted into insoluble fatty acids in crystals. The change is due to the diffusion of pancreatic juice outside the pancreas, the steapsin breaking up the fat into fatty acids and glycerine. Why this process should be followed so speedily by death is difficult to explain. It has been suggested that the solar plexus is acted on or that trypsin is absorbed, but we have no proof of either occurrence. The hæmorrhages that occur are

due to the action of trypsin on the vessels causing necrosis of their walls.

Causes of Acute Pancreatis. What brings on the pancreatic drama? No definite answer can be given, but the author points out as a significant fact the frequency with which it is associated with chronic pancreatitis due to gall-stones, whereas in cancer of the head of the pancreas, in cancer of the ampulla of Vater and in pancreatic calculi it extremely rarely occurs. This seems to point to the importance of gall-stones as a casual factor.

E. N. Cunliffe.

The Anæmias of Infancy.

Petrone (Giuseppe-Antonio). *Archiv. Génér. de Méd.*, June, 1907.

The term "anæmia" includes hæmatological syndromes characterized not only by quantitative and qualitative changes in the red cells and hæmoglobin but also by other signs, relating to the white cells. On this basis, a classification is readily made into cases of "pure anæmia," where concomitant changes in the white cells are absent, and secondly cases of "complicated anæmia" where other hæmopoietic organs are involved. It is not probable that the different forms of infantile anæmias are gradations of the more morbid type as is held by some. It has been proposed to classify cases according to whether splenomegaly is or is not present, but this method is not to be recommended since in many cases enlargement of the spleen is merely a secondary complication. The classification into cases with or without leucocytosis also fails, and in our present state of knowledge an etiological classification is impossible since not only may different types of anæmia apparently depend on the same cause but also one type may depend on different causes. The only classification possible is one that takes into account both internal and external causes such as is manifested by the reaction that it produces in the hæmopoietic structures. The reaction is best evidenced by the blood picture and at present the only possible classification is a hæmatological one. We can avail ourselves of a second classification according to the cause. The terms primary or essential and secondary or symptomatic are better replaced by the terms "cryptogenetic" and "those due to known causes." Adopting then, as a first method of classification, the division into "Pure Anæmias" and "Complicated Anæmias" we can further consider the various sub-divisions under the following headings.

I. Pure Anæmias.

A. *Simple Anæmia.* This state is characterised by oligocythæmia and decrease of hæmoglobin due to the entry into the circulation of red blood cells incompletely formed and poor in

hæmoglobin. The regeneration of the blood is, however, of the orthoplastic type. During infancy this form of anæmia is accompanied by greater changes in the form and staining qualities of the red cells than in adults, and nucleated reds (of the normoblast or microblast type) are more frequently met with. The causes of this condition are multiple, acting sometimes by increasing the destruction of the blood, sometimes by decreasing the formation, as in an acquired or congenital functional defect of the bone marrow, or sometimes in both ways concurrently. The more frequent causes include: Gastro-intestinal disorders, scanty or unsuitable food, bad hygiene, hereditary syphilis, tuberculosis, worms, pyogenic infections (especially multiple sub-cutaneous abscesses), septic infections especially of the mouth, acute exanthemata (including vaccination). About puberty the rapid development of the body and mind may lead to anæmia, especially in the presence of some acquired or inherited weakness of the cardio-vascular apparatus and hæmatopoietic organs. In some cases a congenital weakness of the sympathetic nervous system seems to be the cause. Rickets is often accompanied by anæmia. Frequently both the anæmia and rickets are due to the same cause, although it is difficult to exclude the possible influence of alterations of the bone marrow produced by the bony changes of rickets.

B. *Pernicious Anæmia.* Some authors by this name indicate merely the metaplastic type of anæmia, but since the aplastic type has an equally grave prognosis it is better to include also this form.

The *aplastic* variety is rare. It is characteristised by a very pronounced decrease in the number of red cells with a hæmoglobin index equal to or less than unity, but there is no sign of any reaction of the bone marrow. The author gives particulars of a case occurring in an infant ten months old. The blood count showed 1,040,000 red cells, 12 % hæmoglobin and neither nucleated reds nor megalocytes in the circulating blood. This is the only case he has heard of in an infant.

The *metaplastic* variety showed an enormous oligocythæmia, a hæmoglobin index greater than unity, together with the circulation of megalocytes and nucleated reds, chiefly of the megaloblast type. Their presence indicates a metaplastic reaction on the part of the bone marrow. Polychromatophilia, poikilocytosis and anisocytosis are all very well marked. Both in the metaplastic and aplastic varieties a polymorphonuclear leucopenia is usually present. The etiology of pernicious anæmia has been investigated only as regards the usual metaplastic variety. For a long time it has been regarded essentially as a blood affection due to an unknown specific cause and characterised by a progressive course and a fatal termination. Stress was formerly laid on the unknown specific cause but increased knowledge has revealed many different causes and at the present time some apply

the name to a clinical and hæmatological syndrone sometimes cryptogenetic, sometimes due to known etiology, whilst others would reserve the term for cryptogenetic cases that terminate fatally. The latter plan is hardly feasible, for with more knowledge we may hope to ascertain the cause of these cases and perhaps to affect a cure. The causes that have been advanced up to now include several which are known to cause simple anæmia, and which under certain conditions may, according to Ehrlich, produce the pernicious form. Amongst these causes may be mentioned bothriocephalus, ankylostoma duodenale, repeated hæmorrhages, malignant tumours, malaria, hereditary or acquired syphilis, buccal sepsis, intestinal auto-intoxication. Endoglobular parasites have also been described by Lefas. Hunter is of opinion that all cases have a common cause, namely atrophy of the gastro-intestinal glands producing defective digestion and abnormal fermentation, whence arise the absorption of hæmolytic poisons which destroy the red cells in the portal circulation. This explanation can, however, explain only a limited number of cases and the author follows Ehrlich in believing that the gastro-intestinal atrophy is a concomitant rather than a cause of the anæmia. The same may be said of the theory that alteration in the abdominal sympathetic system is the cause. What explanation can be offered of the mechanism whereby the causes given above that usually cause a simple anæmia effect in some cases metaplastic changes characteristic of pernicious anæmia. Ehrlich and others believe that the explanation depends on the assumption that toxic substances are present which act not only as hæmolytic agents, but also specifically on the bone marrow producing a retrograde metamorphosis. They base their opinion on the fact that there is not always a parallelism maintained between the degree of anæmia and the metaplastic changes as shown in the blood. There is, according to them, an essential difference, qualitative and not quantitative merely, between the causes of the two forms of anæmia. The author does not accept this explanation. He believes that in exceptional cases the bone marrow is so feeble that even the extra work involved by an anæmia of mean intensity is sufficient to provoke the metaplastic reaction, whilst in other cases the bone marrow has excessive functional activity and replies with an orthoplastic reaction even in face of a severe anæmia, whilst in other cases again functional activity may be so slight that there is no reaction to an intense anæmia, thus explaining the cases of aplastic anæmia. It is probable, however, that the aplastic varieties depend exclusively on a functional insufficiency of the bone marrow when attacked directly by a pathogenetic agent and not indirectly by a process of globular destruction. This theory is in accordance with that of Vaques and his school, who hold that there is a difference in degree but not in nature, between simple and metaplastic pernicious anæmia.

This school is of opinion that the megaloblastic metamorphosis of the bone marrow represents merely the last struggles of attempts at regenerative activity. The term "pernicious anæmia" may, however, still be retained to denote a syndrome of distinct pathology, hæmatology and symptomatology but due to a variety of etiological factors. The author lays stress on the probability that the essential cause of anæmia of the pernicious type is a special susceptibility of the bone marrow, that is an individual predisposition that may be inherited or acquired. The rarity of pernicious anæmia in childhood seems to point to this predisposition being acquired rather than inherited.

C. *Anæmia of the Chlorotic Type.* All cases of anæmia which are characterised by a hæmoglobin index less than unity may be termed "anæmias of the chlorotic type," and every case of simple anæmia may be thus designated, since at a certain stage of convalescence the entry of immature red cells into the circulation will lower the hæmoglobin index The author, however, includes in this class only those cases of infantile anæmia where throughout the course of the disease no diminution in the number of red cells takes place, the change being one merely of loss of hæmoglobin. Thus it differs from the true chlorosis of puberty not only in pathogenesis and symptomatology, but also in hæmatology, for in chlorosis the red cells are often decreased. The pathology of the condition is, essentially, a diminution in the quantity of iron necessary for the formation of hæmoglobin. This diminution may be the effect of a congenital defect due to material causes or the result of a twin pregnancy or may result from post-natal conditions such as malnutrition, bleeding from the umbilicus, etc. Apart from the condition as thus described, it is possible to get in childhood cases of anæmia similar to the true chlorosis of puberty, and Tedeschi has described cases of this variety.

II. Complicated Anæmias.

These forms of anæmia might be sub-divided in the first place according as they are simple or pernicious in type, but a more important classification is founded on the reactions that occur in the hæmotopoietic organs. In many cases the cause is known. Anæmia due to infection with pyogenic organisms is usually accompanied by a polymorpho nuclear leucocytosis; where malaria is the cause the mononuclear cells are increased; where animal parasites the eosinophilous cells. In anæmia due to gastro-enteritis, tubercle and syphilis the leucocytic count varies and is of little diagnostic value. Post-hæmorrhagic anæmia shows itself by oligocythæmia and oligochromia with usually a leucocytosis and the appearance in the blood of nucleated red cells and myelocytes.

The more important forms of anæmia belonging to this group are of unknown origin, and these usually develope, in the course of their evolution, splenomegaly. Opinions differ as to the

hæmatology of these "Anæmias with Splenomegaly," and the following different opinions are held:—

(1) That the varieties are examples of a single hæmatological type presenting several gradations. (Hutchison, etc.)

(2) That there are two groups, namely, splenic anæmia and pseudo-leucæmic anæmia, the distinction between the two being quantitative and not qualitative. (Andoud.)

(3) Weill and Clerc recognize besides the pseudo-leucæmia of Jaksch which they term "chronic splenomegaly with anæmia and myelæmia," another group which they call "chronic splenomegaly with anæmia and lymphæmia," but their recognition of the second variety apparently depends on the observation of two single cases.

(4) The author divides these cases into two groups, one showing the presence in the circulation of numerous nucleated red cells out of all proportion to the degree of oligocythæmia, and a second group where the nucleated red cells are distinctly proportionate to the oligocythæmia. In the first group the erythroblastic apparatus is stimulated by the direct action of the causal agent. In this group the leucocytes are usually increased either in both the granular and nongranular varieties, or in rarer cases the granular elements alone, and these correspond to the pseudo-leucæmic cases of Jaksch. The first variety of this first group he calls "pseudo-leucæmia mixed," the second variety "pseudo-leucæmia principally myeloid." In rare cases the leucocytes may be diminished.

The second group of cases, *i.e.*, cases where nucleated red cells appear only in proportion to the oligocythæmia, are usually characterised by leucopenia, and these cases bear a close resemblance to splenic anæmia of adults. This group he calls "anæmia with splenomegaly and leucopenia." In rare cases the leucocytes may be increased, and he suggests the following terms, "anæmia with splenomegaly and lymphocytosis" and "anæmia with splenomegaly and polymorphonuclear leucocytosis." The etiological factors concerned in the production of these forms of anæmia with splenomegaly are probably numerous, malaria, syphilis, and tubercle being the most important. Recently Pianese has described a special parasite, allied to the Leishmann-Donovan bodies, present in the bone marrow. In considering the question of the relation of pseudo-leucæmia of infancy to leucæmia of adult life, the author inclines to the view that some of the former cases may correspond to adult leucæmia, being due to the same causal agent, the effects of which are modified in infancy on account of the difference in the hæmopoietic organs. As regards the rôle of the spleen, it is improbable that it is anything but secondary, and it would be well to substitute for the term "splenic anæmia" the more correct one of "anæmia with splenomegaly."

E. N. Cunliffe.

Three Cases of Liver-Abscess.

CARLSON (B.). *Hygiea*, Stockholm, 1907, p. 822.

CARLSON records a case communicated to him by Dr. Wettergren. The patient, a man of 41, had a paratyphlitic abscess at the end of 1875, which recurred in 1876, and was opened. In mid-summer, 1879, the patient complained of pains in the right hypochondrium; vomiting and rigors appeared, the liver and spleen were a little enlarged, and there was slight jaundice. Liver-abscess dependent upon suppurative pylephlebitis due to the paratyphlitis was diagnosed. Two months later, dulness was found at the base of the right lung. Offensive diarrhœa occurred, with shrinkage of the liver dulness, and it was hoped that the abscess had emptied itself into the intestine. Rigors occurred twice daily; a month later there was copious stinking expectoration, and it was hoped that the abscess would empty itself by the bronchi. The patient died two weeks later; at the obduction, the lumen of the distal third of the appendix was obliterated, that of the proximal two-thirds cystically dilated and full of clear mucus. The left lobe of the liver contained numerous smaller or larger abscesses containing pus or caseous material, and one, the size of a pigeon's egg, contained a very hard, white, sharp-ended fish-bone $1\frac{1}{2}$ cm. long and 1 mm. thick. Probably the bone perforated the appendix in 1875; travelled to the left portal vein, and caused pylephlebitis in 1879. A second case is recorded, in which a girl of 11, living in Sweden, developed ulcerative colitis, followed by swelling of the liver and rigors; no obduction, however, could be made. A third patient, a youth of 17, after repeated attacks of enteritis and probably of appendicitis also, after four days of illness was found to have a purulent streptococcal peritonitis on the right side of the abdomen. At the obduction three days later universal peritonitis was seen; numerous small abscesses were found at the surface of the right lobe of the liver, having burst into the peritoneum. No intestinal ulcers were observed. Probably the liver was infected from the chronic follicular enteritis from which the patient suffered.

A. J. JEX-BLAKE.

A Case of Dorsal Meningocele and Teratoma.

BULL (P.). *Norsk Mag. f. Laegvidenskaben*, Christiania, 1907, p. 1182.

THE child, 1 day old, had a ruptured meningocele between its scapulæ, with bony defect of the 5th, 6th, and 7th dorsal vertebræ; with the meningocele was closely associated an irregular lobate tumour apparently containing cartilage, bone, a joint, and other structures. Club-foot was absent, and the child moved its limbs normally. The teratoma was removed,

and a plastic spinal operation done. Ten weeks later the child died, after a number of fits with clonic spasms. Broncho-pneumonia was found at the obduction; the spinal cord was narrowed at the level of the vertebral defect, while the lumen of its central canal here was much dilated, so that only a thin wall of spinal marrow was left. The teratoma was found to be made up of skin with sweat-glands and blood-vessels, a mass of neuroglia the size of a hazel-nut, a smaller mass of mammary gland (probably), a polypous mass of thymus with lobules and Hassal's corpuscles, another polypous mass of skin with neuroglia and ganglion-cells, a trachea with lymph-glands, cysts and muscle-fibres, a lung, and a limb with bone and a joint and a nail and bundles of nerve-fibres. The author thinks that the teratoma was the primary maldevelopment, growing from the wall of the spinal canal and preventing its closure; the spina bifida, meningocele, and hydromyelus, being secondary thereto.

A. J. Jex-Blake.

Myasthenia Gravis as a Primary Disease of the Muscles.

Frugoni (C.). *Riv. crit. di Clin. med.*, Florence, 1907, Nos. 37–39.

Myasthenia gravis, or Erb-Goldflam's disease, is of very uncertain pathogeny; Frugoni has had the opportunity of studying it, both ante and post mortem, in a man of 56, and gives his reasons for supposing it to be a disease of the muscular system, together with a critical discussion of the literature of the subject. In 1901 Weigert observed certain microscopical changes in the voluntary muscles in this disease; Frugoni, in his case, found the nervous system normal, but observed irregularly distributed areas, in the whole muscular system, in which deposits of small round cells and plasma-cells occurred round atrophied or degenerated muscle fibres. The unstriped muscles were normal. He argues, therefore, that myasthenia gravis should be removed from its vague position among diseases of the nervous system, and transferred to the diseases of the voluntary muscles. Five coloured figures reproduce the changes seen in the muscles.

A. J. Jex-Blake.

Sahli's Desmoid Reaction.

Thiis (K.). *Norsk Mag. f. Laegevidenskaben*, Christiania, 1907, p. 1080.

In 1899 A. Schmidt noted that uncooked connective-tissue is only dissolved by the united action of HCl and pepsin. Sahli made this observation the basis of his Desmoid reaction (1905), using very fine (No. 00) catgut as the connective-tissue: the minute

details for the application of this test must be scrupulously followed as described by Sahli himself (*Corr.-Bl. f. Schweizer Aerzte*, 1905, Nos. 8 and 9). Briefly, 10 cgr. of iodoform and 5 cgr. of methylene blue are carefully placed inside a little square (4 × 4 cm.) of very thin rubber sheeting, and tied up with the catgut; this pill is swallowed immediately after the mid-day meal. If iodine appears in the saliva and methylene blue in the urine within 20 hours, the reaction is taken as positive; most commonly they are to be found the same afternoon or evening. Sahli believes that a positive reaction proves the presence of free HCl in the stomach: his method has the advantages that a stomach-tube need not be passed, and that a normal mid-day meal is more likely to produce a normal secretion of HCl than the scanty Ewald's test-meal is. The test may fail in cases of hypermotility of the stomach with normal HCl secretion, because the pill may be hurried through the pylorus unduly and abnormally rapidly.

The trustworthiness of this reaction has been supported or attacked by a number of writers, and Thiis gives a short discussion of the literature. He also records his own experiments, made on 40 patients. In each case an Ewald's test-breakfast was given in the morning, and withdrawn three-quarters of an hour later. At the mid-day meal a desmoid pill was given, and the result noted. If the test-meal and desmoid reaction gave contradictory results—and this happened in 19 of the 40 cases—the next day's mid-day meal was withdrawn three hours after it had been eaten, to test for hypermotility. In 15 of the 40 cases the test-breakfast was HCl-free on withdrawal, while the desmoid reaction was positive in 7 of the 15. Free HCl was found in 25 cases in the test-breakfast, but 12 of these gave a negative desmoid reaction. The desmoid reaction came off in from 1½ to 17 hours—each of these was a case of gastric ulcer with hyperacidity—and no connection between the degree of acidity and the time elapsing before the appearance of the reaction could be discovered. Thiis believes that the desmoid reaction, considered as a method of testing for free HCl in the stomach, is a failure, and cannot take the place of use of the stomach-tube.

A. J. Jex-Blake.

A Case of Henoch's Purpura, Purpura Abdominalis.

Holmen (A.) *Norsk Mag. f. Laegevidskaben*, Christiania, 1907, p. 1072.

Purpura abdominalis, as a special form of Henoch's purpura, has not always been recognised by writers on purpura. A few days before admission the patient, a schoolboy of 7, had complained of a sudden attack of pain in the lower abdomen, and great pain on micturition; the penis and scrotum were found

swollen to twice their normal size, and much discoloured—bluish-red. No history of recent injury could be obtained. After a few days in bed the swelling and the pain on micturition vanished, but the abdominal pains, and also vomiting, continued, and a dark-red petechial rash appeared. He was taken into the hospital, and petechiæ on the extensor aspects of the arms and legs were noted; the joints were normal in aspect, tender, but not swollen; the abdomen was not distended, but was tense and tender all over, and the abdominal muscles were held firmly contracted. The mouth and teeth were normal. Opium was given to allay the acute spasms of abdominal pain; the motions contained blood, the urine was normal. Then oblong hæmorrhage appeared in both upper eyelids, without conjunctivitis. The temperature was about normal throughout; the ecchymoses and petechiæ disappeared in a few days, as did the abdominal pains. The patient got up after a month in bed, and a fortnight later the eruption reappeared as at first, but unaccompanied by melæna or abdominal pains, and vanished after a few days, after a slight rise in the temperature. The family history and the good domestic circumstances of the child threw no light on the attack. Holmen points out how the case simulated one of perityphlitis; he thinks the intestinal mucous membrane must have been ulcerated, and that the ulcers must have healed up—in other recorded cases this has not always been so, and perforation leading to general peritonitis and death has been recorded. The initial strangury was probably due to hæmorrhage into the corpora cavernosa, causing pressure on the urethra. Recovery was complete. A. J. Jex-Blake.

Myophony, a sign pathognomonic of Hysteria.

Consiglio (P.). *Giornale med. del regio Esercito,* Milan, 1907, p. 481.

Early in 1904 Sicuriani (*Rif. medica,* Jan., 1904) described a rumbling sound ("phonomyoclonus") heard on auscultation of the muscles of certain patients with nervous diseases; the noise was compared to that produced by a carriage passing through a tunnel. Consiglio has studied its production in a large number of patients at the Military Hospital in Rome, dividing these into seven classes. (1) In 50 surgical patients, men aged from 18 to 60, and free from nervous disease, the myophonic rumble was absent; the author notes that in winter the patients might be shivering with cold, and that in this case the horripilation and fascicular twitchings in the muscles would shew the origin *a frigore* of the myophony then audible. (2) In the few nervous cases, myophony was present or absent; it was present in and after the 2nd stage of dementia paralytica, in chronic alcoholism, and in neuritis; it was inconstant in tabes and in paralysis

agitans. (3) It was absent in 23 epileptics, however, and in two cases of Jacksonian epilepsy due to head-injuries. Consiglio thinks that the presence of myophony in an epileptic would suggest that some cortical or subcortical irritation was present. (4) Myophony was present in many of 44 neurasthenic patients seen; Consiglio did not find it in the usual form of neurasthenia with depression, the intellectual or volitional neurasthenia; but it was common in the emotional type of neurasthenia, with erethism or moral hyperæsthesia, of the hysteroid or hystero-neurasthenic varieties. (5) In 124 cases of insanity of all sorts true myophony was absent, excepting in a few patients with alcoholic, traumatic, or hysterical insanity. (6) Military medical men see a number of cases of convulsive or convulsiform attacks which defy closer analysis or definition, and are not epileptic; they occur in psychasthenics, degenerates; and as these patients do not exhibit myophony, the diagnosis of hysteria may be excluded. (7) Observing 96 hysterical patients, Consiglio finds that myophony is pathognomonic of hysteria. The sound, apparently heard through a stethoscope, is a fine continuous distant rumble occasionally interrupted by louder sounds, and is best heard by the specially-trained ear. It is produced quite apart and without any visible fascicular or fibrillary muscular twitching. It may be heard over almost any muscle; the pectorals, the biceps, the masseters, the muscles of the thigh or hand, may be auscultated. It ceases in sleep, and is increased by exertion, and still more so by emotion, whether external or internal in origin—a rupture of the unstable psycho-nervous equilibrium of the hysterical—and may be mono- or hemi-localised, and is connected with the psycho-emotive tonality. It is a further development of the mechanism giving rise to the normal muscular sound produced by tonic contraction of the muscles normally; it is due to fibrillary contractions of the muscle-fibres when they are apparently at rest, and is an early stage of myoclonus, and is more marked on the hypo-æsthetic side or area of the body in a hysterical patient than on the hyper-æsthetic side. Like hysteria, it depends on a functional disconnection or disorientation of the two hemispheres of the brain. Consiglio concludes with a general discussion as to the connection of myophony with tremor, and as to the causation of hysteria. A. J. Jex-Blake.

The Cerebral Localisation of Aphasia and its Classification on an Anatomical Basis.

Dana (Charles L.). *New York Medical Journal*, Aug. 10, 1907. Dr. Dana's paper deals only with aphasia of vascular origin, which he classifies in four groups:—

1. Fronto-capsular aphasia (aphemia), due to lesion of a ganglionic branch of the middle cerebral artery. Cortical

vascular lesions of Broca's convolution are too small to produce more than a slight and temporary aphasia, and a deep lesion involves the internal capsule and lenticular zone. Hence this type of aphasia is always accompanied by hemiplegia. The patient cannot speak, repeat, ejaculate or count, but he writes, reads, understands and has good intelligence. There are no sensory symptoms, though, if the superior longitudinal and arcuate bundles are damaged, some symptoms of sensory aphasia will be superadded.

2. Occipital or parieto-occipital aphasia (pure alexia), due to lesion of the posterior cerebral, or a terminal branch of the Sylvian artery. In the former case, the intermediate visuo-psychic centres concerned in reading, situated in the angular and second occipital gyri, are involved, together with the connecting tracts (inferior longitudinal bundle, etc.). Hence there is inability to read. The patient can write, but is unable to read what he has written. There is no loss of speech or understanding; hemianopsia is always present, and there is usually some hemiataxia or hemianæsthesia, and perhaps a very slight and temporary hemiplegia. If the Sylvian artery is involved, the angular gyrus is again damaged, but generally there is at the same time injury of the temporal cortex, with resulting anomia and mind deafness, in addition to alexia.

3. Temporal or parieto-temoral aphasia (sensory aphasia of Wernicke), due to lesion of the Sylvian artery or its branches, damaging the first and part of the second temporal convolution and the inferior parietal, including the supra-marginal and angular gyri. The patient has some voluntary and responsive speech, and eventually talks freely, but with paraphasia, confusion or repetition. He has defects in grammar, and cannot use verbs; there is also anomia. Writing and reading are much impaired. There is little or no hemiplegia, but some sensory symptoms usually exist, such as hemianopsia, anæsthesia, ataxia or astereognosis. The intelligence is somewhat impaired; the patient may be able to understand simple speech, but complicated ideas or directions are not comprehended. When the lesion is very small, there may be only anomia, or pure temporal lobe aphasia (optic aphasia).

4. Fronto-lenticular or lenticular zone aphasia (mixed aphasia), due to lesion of the ganglionic branch of the middle cerebral artery, usually the lenticulo-striate. The corpus striatum, internal capsule, and the fibres converging into it from the third and second frontal and from the præcentral convolutions are involved. There is inability to speak, perhaps incomplete, with alexia or dyslexia, agraphia or dysgraphia, some word deafness, a good deal of hemiplegia, and no sensory symptoms, but with some impairment of intelligence. This is the common type of mixed aphasia.

Dr. Dana considers that Marie has not proved his contention that Broca's convolution has nothing to do with the language zone. He holds that this convolution is concerned in the elaboration and co-ordination of the movements of speech. It is a psychic, not a motor, area; it does not work upon the pyramidal tract directly, and has no projection fibres, but sends its impulses to the cortical centres for the organs of articulation. Marie's opinion that lesions of the lenticular nucleus cause complete anarthria or pure aphemia, is correct; but this result is due to damage, not of the nucleus itself, but of the converging fibres from, or associating fibres to, Broca's convolution. Dr. Dana accepts Campbell's view that the cortical localisation of articulatory movements is not confined strictly to Broca's area, but involves the whole area at the base of the first frontal and extends into the second frontal convolution.

JAS. W. RUSSELL.

The Neurasthenic Neuralgias.

HALLOCK (FRANK (K.). *New York Medical Journal*, Sept. 7, 1907.

IN neurasthenic neuralgia the affected area is usually more or less constant and restricted; the seat of the pain is traversed by a sensory nerve trunk, or corresponds fairly well with the area of distribution of a sensory nerve; and the pain itself is subject to exacerbations. Alterations in the mental state and bodily health produce relatively marked variations in the pain, which often has a demoralising effect and seems to undermine the power of endurance. In addition to the neurasthenic condition, some exciting cause can generally be recognised, such as local or general strain, exposure to cold or wet, emotional disturbance, etc. Two varieties are described. In the non-objective form, the pain occurs with little or no physical symptom, though it may be the result or relic of an antecedent neuritis. The objective variety is accompanied by local symptoms, and is difficult to diagnose from neuritis; by many the term neuralgia is considered to be inaccurately applied to this condition. In either variety there is a central as well as a peripheral element in the origin of the pain.

The underlying nerve trunk is sensitive and tender during the continuance of the pain, which may be aching, burning or stabbing, and is often paroxysmal, with varying intervals between the attacks. Fluctuating disturbance of skin sensibility is usually present, commonly in the form of hyperæsthesia or hyperalgesia, though in old cases some diminution in tactile and pain sensation is sometimes observed. In the exacerbations and in the earlier and more acute stages a common combination is that of hyperalgesia with hypæsthesia. Temperature sense always persists, and may be increased or diminished. Muscular

sense is unimpaired, or may even be abnormally acute. Temporary motor disturbances may occur in the neuritic forms. Vasomotor disturbances are seen with relatively greater frequency in neuralgia of the trigeminus, and in these cases sweating and flow of tears are common during the exacerbations. Trophic symptoms do not occur; but a mild grade of erythema, herpes or pemphigus is said to be sometimes observed in the neuritic type. The mental symptoms are of course characteristic of neurasthenia. The general treatment is that of neurasthenia. Locally, rest is at first advisable, followed by massage, manipulations, application of heat and cold and hydrotherapeutic measures. JAS. W. RUSSELL.

Relapses in Diphtheria.

ROLLESTON (J. D.). *British Journal of Children's Diseases*, August, 1907.

PRIOR to the introduction of antitoxin opinions differed as to whether relapses in diphtheria were usually of greater or of less severity than the primary attack. Since antitoxin has been in general use, however, it has been agreed that second attacks are as a rule milder than original ones. The frequency of relapses is given by various authors at from 1 to 1·5 per cent. In the present paper the term relapse is restricted to a second attack occurring before the patient in question has been discharged from the hospital to which he was admitted with the primary attack. Though about 14 per cent. of the series were over 10 years of age no case of relapse occurred amongst those over this age. Three times as many cases of relapse occurred in males as in females. Relapse, like the late tonsillitis which occurs in diphtheria, is more common in the winter months, and is more frequent after very mild attacks, than after severe attacks. It is to be noted as regards the present series that four of the cases of relapse, being very mild, had not received antitoxin in the primary attack. Relapses do not occur before the third week, they require only small doses of antitoxin, and their serum phenomena tend to be severe and early. The causation of relapses is obscure.

FRANK E. TYLECOTE.

Irregularity of the Pulse in Diphtheria.

PETERS (O. H.). *Lancet*, September 14, 1907.

THE percentage of cases of diphtheria in which irregularity of the pulse is said to occur varies with the age of the patients, and in adult patients it is hardly ever seen. The majority are really cases of respiratory irregularity, and have no reference to any cardiac lesion, but depend on the nervous or mechanical

effect of the respiratory act on the circulation. Cases of true arhythmia are more rare, and do not exceed 10 per cent. In these cases the prognosis is much worse; intermittency often precedes irregularity—the latter, in this group, signifying a more advanced stage of the myocardial disorder. The usual form, or group showing respiratory irregularity or pulsus paradoxus occurs with the fall of blood-pressure, temperature, and pulse-rate, towards the third week of the disease. With the brady-cardia comes the " irregularity " and the golden rule is, not to allow the patients up until the subsequent tachycardial reaction is well established. If the spurious irregularity be more carefully differentiated from the true arhythmia the result will be in many cases a much shorter stay in bed and in hospital—a great gain, both economically and medically. Analysing about 100 consecutive cases of diphtheria and of scarlet fever, the author met with quite as great a percentage of irregular pulses in the scarlet fever cases as in the diphtheria cases.

FRANK E. TYLECOTE.

Some Points in Infantile Tuberculosis.

HOLT (L. EMMET). *Archives of Pediatrics*, September, 1907

PULMONARY tuberculosis is a very common disease in infants, and a systematic search should be made for the bacilli in the sputum of children who are known to have been exposed to infection. The tuberculin test should also be tried. The great difficulty is the collection of the sputum, but this may be overcome by catching the plug of mucus coughed up on a gauze swab before it is swallowed. Tubercle bacilli were found in the sputum of 54 cases out of 67, 62 of which were under two years of age, and in only half of these cases were there any pulmonary signs at all. Direct contagion seems to be the most frequent cause of the disease, and a routine examination of a number of cases admitted from any cause gave the surprising result that it was quite exceptional not to find tubercle bacilli in the sputum of children whose parents were either of them affected with tuberculosis. Therefore it is probably direct contagion which is responsible for most of the tuberculosis of infants rather than infection by milk and other foods.

There is also considerable difference as to the frequency with which tubercle bacilli may be found in the cerebro-spinal fluid in cases of tuberculous meningitis. This is probably due to faulty technique because tubercle bacilli were found in 42 consecutive cases of tuberculous meningitis at the Babies' Hospital, where great pains were taken in the examination, the average time occupied being about one hour and the whole of the fluid drawn off being examined. The technique of the method adopted is given in the article.

C. P. LAPAGE.

Rheumatic Carditis in Childhood.

Coombs (C.). *The Bristol Medico-Chirurgical Journal*, September, 1907.

Of 75 children seen with various rheumatic disorders 60 per cent. had rheumatic carditis. The pathology of rheumatic carditis presents four salient points:—(1) It is a carditis. (2) The rheumatic infection is blood-borne. (3) The gravity of rheumatic carditis in the earliest or childhood stage lies chiefly in the damage done to muscle, as both clinically and after death the great feature of acute rheumatic carditis is ventricular dilatation. In later years the permanent serous lesions become important. (4) Rheumatic carditis, like all other rheumatic lesions, is remarkably apt to recur—or recrudesce. A point to be emphasised is that in the early acute stages it is the myocarditis that kills.

The physical signs—outward displacement of the apex-beat, widened area of impulse, abnormally ready perception of the peristaltic nature of systole, increase of the transverse cardiac dulness on both sides, the murmur of mitral incompetence, and the signs of raised pulmonary tension—are all due to a dilatation of both ventricles. That there is hypertrophy is suggested by the firm character of the impulse at its maximum point; but the principal feature is dilatation. Post-mortem findings confirm this, as the cases examined had valvular lesions, but not enough to account for death.

In both endocardium and pericardium the reaction to rheumatic infection may be conveniently divided into three stages—the acute, the recurrent, and the cicatricial. Clinically, the acute is not the commonest phase of rheumatic pericarditis in childhood: it is characterised by a rapid increase in the area of cardiac dulness due to dilatation rather than effusion of fluid and by a friction sound over the whole precordium:—it appears to end in resolution, but in reality leads to a first instalment of obliterating adhesions. The recurrent stage is commonest clinically, but is often overlooked. The cicatricial stage is not common in children.

Advanced cicatrisation of the valves is rare before the age of 16. Neither aortic incompetence nor mitral obstruction is common in a well-developed form in childhood and a presystolic murmur and thrill do not necessarily mean mitral stenosis in rheumatic children.

The object of this paper is to show that for the production of those signs which are met with in a great majority of the cases of rheumatic carditis in childhood, it is quite unnecessary to blame the valves or the pericardium; the myocardial changes which are always present are enough to account for everything.

C. P. Lapage.

Delimitation of Dilatation of the Stomach.

LEVEN and BARRET. *La Presse Médicale*, June 8, 1907. BISMUTH salts are exceedingly opaque to *x*-rays, and this fact has been used in diagnosis of abnormal conditions of the alimentary canal, such as œsophageal diverticulæ, etc. Drs. Leven and Barret attempt to define the position of the normal stomach by this means and to diagnose the presence or absence of dilatation. Usually the stomach occupies the left hypochondrium, and is placed almost vertically with a small bend at its lower end. The level of the lower border is no guide to the presence of or absence of dilatation as it is found that stomachs which are apparently normal extend sometimes below the umbilicus.

The diagnostic point on which they rely is the manner in which the capacity of the stomach is increased. They find that the level of the fluid contents of the stomach remains constant for all reasonable quantities, the increased capacity being obtained by lateral filling out of the organ. It is the muscular action of the walls that produces this effect, and it is found that in dilated stomachs, *i.e.*, where the walls are atonic, the fluid gravitates to the bottom where it hangs as in a sac. The level of the fluid in such a stomach can only be raised to the normal point by the addition of abnormally large quantities of the suspended bismuth.

A. E. BARCLAY.

The Heart Reflex and the mechanism of Angina Pectoris.

ABRAMS (ALBERT)....*Medical Record*, December 14, 1907. THE author describes the phenomenon known as the "heart reflex." This reflex is a contraction of the myocardium of varying duration and is obtained by irritating the skin of the præcordial region.

The reflex is as a rule more manifest in the left than the right ventricle. It is more evident and of longer duration in dilated than in healthy hearts.

The alteration in shape and size of the heart constituting the reflex can be directly observed by means of the X-rays and also by careful percussion of the deep cardiac dulness. The extent to which the heart diminishes in bulk may be as much as two centimetres on either side upon the first application of the irritant.

The heart reflex can also be elicited by irritation of more remote regions, viz., (1) by irritation of the nasal mucosa, (2) by irritation of the gastric mucous membrane, (3) by irritation of the rectal mucosa, (4) by irritation of the œsophageal mucosa in the act of swallowing, (5) by percussion of the muscles, (6) by psychic irritations, (7) by vertebral concussion.

The reflex obtained by the inhalation of irritating vapours is more pronounced than when the præcordial area is stimulated: choloform and ether produce a very marked effect. The reflex obtained by percussing, for example, the muscles of the arm is peculiar in that it is the right heart only which retracts, the left being uninfluenced. The most potent factor as a causative agent in the production of this reflex is psychic irritation. Fright causes a dimunition in the size of the whole heart as viewed on the fluorescent screen and the heart appears as if it were retracting into the neck.

Concussion of the spinous processes gives interesting results, for example, if the spinous process of the VIIth cervical vertebra be concussed the ordinary heart reflex of contraction is obtained, but when the spinous processes of the VIIIth, IXth, Xth, XIth, and XIIth dorsal vertebræ are rapidly concussed in succession, there is a decided increase in the area of cardiac dulness as obtained by percussion.

In the normal subject the heart reflex is of short duration, but in cardiactesis it may persist for several hours. This fact at once suggests the value of irritation of the præcordial area in atonic and dilated hearts.

This reflex can be be employed in diagnosis. It is absent in pericardial effusion and present in cardiactesis. It may be difficult to say whether a pulsating intrathoracic mass examined by X-rays is the heart or an aneurysm; retraction of the mass on provoking the heart reflex would indicate that it is the heart and not an aneurysm.

It is probable that the carbonated baths in the Schott treatment possess no special effect beyond their action in provoking the heart reflex by cutaneous irritation, and that cutaneous irritation by any other method is equally efficacious.

Angina pectoris. The author accepts the view that angina pectoris is due to transient ischæmia of the heart muscle, but he does not consider that there is sufficient evidence in favour of the theory that the ischæmia is due to intermittent claudication of the coronaries. He points out that any factor which increases the tonicity of the cardiac muscle will compress the coronaries and thus induce ischæmia.

The heart reflex is essentially a myocardial contraction and when the reflex is in evidence the coronary arteries are subjected to varying degrees of pressure. One notes that the factors which precipitate a paroxysm of angina are equally operative in inducing the heart reflex, as for example, muscular effort, emotion, cold to the precordium, and so forth.

Again anginoid pains may be unintentionally induced by percussion of the præcordium, and they are sometimes relieved by concussion of the lower dorsal vertebræ which has the effect of causing cardiac dilatation.

John Hay.

Acute Meningitis in Secondary Syphilis.

BOIDIN and WEIL. *La Presse Médicale*, October 19, 1907.

HERE is recorded the case of a young man of 18, admitted into hospital with all the clinical signs of an acute meningitis. The first impression the authors had was that the case was tubercular, as there was only very slight pyrexia. On a complete examination, however, a hard chancre was discovered on the penis, and the history then obtained showed this to have appeared some six or seven weeks previously. Lumbar puncture showed lymphocytosis. Four days later a typical roseolar eruption came out. In twelve days from admission, under mercurial treatment by injection, all meningeal symptoms had disappeared. It must be mentioned, however, that the patient was a printer, and showed slight symptoms of plumbism. The fluid obtained by lumbar puncture was injected into guinea pigs without result, and culture tubes inoculated with it were also negative. The occurrence of acute meningeal symptoms so early after the syphilitic infection is decidedly rare; the writers appear to regard them as due to an exanthem.

FRANK E. TYLECOTE.

Have the forms of General Paralysis altered.

CLARK (L. P.) and ATWOOD (C. E.). *Journ. Nerv. and Mental Disease*, 1907. Vol. xxxv., p. 553, 1907.

ATTENTION has been frequently drawn to the fact that the relative frequency of the grandiose type of General Paralysis of the Insane appears to be now considerably less than it was some years ago. The authors have collected for statistical purposes the notes of 3,000 cases which have been observed in New York during the past thirty years. These they divide into three classes; the grandiose type with euphoria or expansive delusions; a depressed type with depression or hypochondriacal delusions and an excessive emotional element; and a simple dementia type in which the only symptom is primary progressive mental deterioration.

They come to the conclusion that there has not been any definite change in the clinical features of the disease; the grandiose form still predominates in about 70 % of the cases, the simple dementia form includes about 20 %, while the depressed type is found in only about 10 % of all the cases.

GORDON HOLMES.

The Symptomatology of Lesions of the Lenticular Zone, with a Discussion on the Pathology of Aphasia.

MILLS (C. K.) and SPILLER (W. G.). *Journ. Nerv. and Ment. Disease*, vol. 35, p. 558, 1907.

THIS long paper in which the clinical feature and the pathological lesions of eleven cases are described, is chiefly of interest from

its bearing on Marie's revolutionary views on the localisation of the functions of speech in the brain. According to Marie the generally accepted theories of aphasia are incorrect and there is no ground for assuming the existence of the cortical centres of speech which are usually described. Lesions of Wernicke's zone, that is of the convolutions around the posterior end of the fissure of Sylvius, cause considerable mental impairment, and consequently inability to comprehend spoken or written language. On the other hand, that which is generally known as pure motor aphasia is, according to Marie, only anarthria and is by him attributed to destructive lesions of the lenticular zone; under this term he includes not only the lenticular nucleus but also the island of Reil and its subjacent white matter, the greater portion of the caudate nucleus and part of the optic thalamus and of the internal capsule.

In a review it is not possible to give more than the conclusions which have been arrived at by Mills and Spiller. They find it difficult to form any positive conclusions on the function of the lenticular nuclei, or on the symptomatology of their disease. Lesions limited to the nucleus do not cause any sensory symptoms, but it is possible that destruction of certain portions of it may produce a hemiparesis of the opposite side of the body, which is, however, only slight in degree and often only transient. True motor aphasia, as this form of speech disorder is generally understood, is never due to a lesion limited to the lenticular nucleus, no matter how large it may be, but slight anarthria may be produced by disease of the nucleus of the left hemisphere. Part of the cortical motor centre for speech lies in the island of Reil, and may be consequently easily affected by any disease of the lenticular nucleus. And owing to this fact motor aphasia may be present without a lesion of Broca's convolution, in which only a portion of the motor speech centre is contained.

The observations of the authors fail to give any support to Marie's theories.

GORDON HOLMES.

Surgery.

On the Ætiology of Madelung's Deformity.

EWALD (P.). *Arch. für klin Chirurg*, Band 84, Heft. 4, p. 1099. THERE is much difference of opinion as to the origin of the deformity, it is not settled whether it is due to a twisting of the bone, or of its epiphysis or to alteration or subluxation of the joint surfaces.

Only it is known, that it is a progressive disease occurring during growth, that it is commonest in females, that it gives rise to little or no pain, and that it tends to a spontaneous cessation. There may be a previous history of a single injury or of a continued occupation trauma, or of no injury whatever.

The deformity consists of a marked prominence of the epiphysis of the ulna and bend in the radius; with these there is prominence of the flexor carpi radialis, flexor carpi ulnaris, and palmaxis longus; the power of dorsi flexion at the wrist is diminished.

The origin of the deformity seems to be in the radius; Madelung considered the joint surfaces to be at fault; a diminution in the palmar portion and an increase in the dorsal.

It has been compared to the change occurring in the lower end of the femur in genu valgum.

Occupation, tramatism, rickets, and rarefying osteitis have all been called in to explain the occurrence of the change.

Some advise that the condition should be left alone, others suggest massage, and even osteotomy of the radius; the latter treatment proved good in a case reported by the author, which although directly the result of an injury, corresponded to Madelung's "deformity."

Ewald thinks the "deformity" is always due to trauma, the effects of which by partly destroying the epiphysis may appear slowly.

LAWRENCE JONES.

An Operation for Diverticulum of the Œsophagus.

GOLDMAN. *Centrablatt für Chirurg*, Dec. 21, 1907.

THE outstanding danger in œsophageal surgery is septic infection of the cervical cellular tissue. In 42 published cases in which the œsophagus was opened from the surface six only healed by first intention, while 26 developed fistulous openings and eight died from septic complications.

It is therefore essential to avoid soiling of the wound, and hence many methods have been attempted in the surgical treatment of diverticula of the œsophagus.

Goldmann describes the method which he employed in the case of a small diverticulum, 4 cm. deep, situated to the left side at the lower end of the pharynx, The case was further complicated by the presence of a bronchocele. A long incision was made over the anterior border of the left sternomastoid muscle and the bronchocele exposed in the usual way. Its left half was excised and the diverticulum was then readily seen and cleaned from its surroundings. The narrow neck of the sac was ligatured and the unopened sac was then fixed by sutures penetrating into but not through its wall into the skin at the upper angle of the wound. The rest of the wound was closed and healed without event. On the eighth day the protuding resoluted diverticulum was removed with the thermocautery. Recovery was complete in a fortnight.

E. D. Telford.

The Results of Cleft Palate Operations.

Springer (C.). *Prager med. Woch*, Nov. 21, 1907.

The author, in a paper published in 1902, drew the following conclusions.

The operative closure of the cleft is desirable for social no less than anatomical reasons. Whereas in nearly every case a good anatomical result is to be attained, the functional result is on the whole not nearly so good. Operation is only to be considered in strong healthy patients, and the best time for the operation is from the fourth to the seventh years.

Operation in the first year of life is not to be recommended and its mortality is far too high, whilst the mortality amongst unoperated children with palatal clefts is not as high as is usually supposed.

Since 1902 there have been many more papers and in the present article Springer considers in very thoughtful fashion the work which has been done and comments on the results obtained by him since his former paper. He discusses in all 46 cases which have been followed up to date.

The immediate anatomical results are presented in very careful and detailed tabular form. A large number of cases published by other workers are similarly set forth.

The author is, however, more immediately concerned with the ultimate functional result. He is able to estimate this in 32 cases and finds that 5 are perfect, 3 very good, 5 altogether bad, and the rest may be described as fair.

Some of the imperfect results show great improvement after tuition in enunciation and a few cases may need an obturator

for their improvement. In some instances where a good anatomical result is obtained the new palate is too tense, and here very good results follow the freeing of the palate by section of the faucial pillars. The results of the author and of other writers prove that the success of the operation depends almost entirely upon subsequent education of the child. If this be admitted it must be allowed to determine the age of election for operation since the child must be old enough to be taught, and not so old as to have had its faulty intonation stereotyped. The author therefore considers that the period between the fourth and sixth years is the time of election, and supports his view with several tabular statements of results. The early operation is unhesitatingly condemned, and its high mortality of 10 per cent. is the main count against it. The mortality of children unoperated upon in early life is not nearly so high as has been generally supposed. The tendency of mouth operations to set up fatal gastro-intestinal inflammation in infants is insisted on. The paper closes with some useful hints in the rearing of the victims of this distressing deformity.

E. D. Telford.

The practical application of local anæsthesia in fractures.

Lerda (G.). *Centralblatt für Chirurgie*, December 7, 1907.

There are many and obvious advantages in the use of local as opposed to general anæsthesia in cases of fracture. Lerda has employed a method in many cases with very satisfactory results, and in his paper he gives details of the technique. It is essential that the exact line of the fracture be determined, and this fact does much to reduce the scope of the method. If the exact line of separation can be determined the anæsthetic agent is injected between and around the broken ends by a hypodermic syringe provided with a long stout needle. The fluid used is a half per cent. solution of cocaine in physiological salt solution. Within ten minutes of the injection anæsthesia at the site of the fracture is complete, muscular spasm is abolished and the reduction and fixation of the fracture can be carried out without pain. No ill-effect has been seen in any of the author's cases.

This method would appear to be of great value preliminary to transport in military surgery.

E. D. Telford.

Amœbic Dysentery (chronic) a Surgical Disease.

Holt (J. M.). *New York Medical Journal*, November 16, 1907.

If a case of amœbic dysentery has resisted treatment by thorough irrigation of the colon for more than one year it should be regarded as chronic, and should be submitted to surgical

treatment. In all case which have persisted for one year or more in which the amœba coli is still demonstrable in the stools and where the sigmoidoscope reveals no ulcers surgical intervention in the shape of appendicostomy or colostomy is indicated. It is by this means alone that thorough irrigation of the colon can be carried out. The best lotion is a solution of sulphate of quinine which may be used at first of a strength of 1 in 3,000 and gradually increased to 1 in 500. The results have been most satisfactory, and the author states that of the commissioned officers of the Public Health and Marine Hospital Service of the United States who suffered infection whilst in the Philippines 100 per cent. have had an appendicostomy performed with complete recovery in every instance.

E. D. Telford.

Renal Decapsulation in Eclampsia.

Franck (O.). *Muench. med. Wochenschr.*, 1907, No. 50.

The case here recorded makes the tenth published case of decapsulation for eclampsia. Striking improvement followed the operation, but the patient died two days after from pneumonia.

Case. Three-para, in the fourth month; previous labours normal. Eclamptic seizures occurred at short intervals the day before admission, and when admitted she was deeply comatose. Labour was induced under slight chloroform narcosis, four seizures occurring during the anæsthesia. Severe and frequent fits persited in spite of morphia, and fifteen hours after delivery the patient appeared moribund. There was suppression of urine with albumin 4 per 1,000. Decapsulation was now performed on both sides without anæsthesia. The right kidney was not enlarged, but the left was dark-red and much swollen; both capsules were firmly adherent in places to the cortex. The operation lasted thirty minutes, and at the finish the patient was almost inanimate. Camphor, saline infusions and oxygen were given. Three hours after operation the fits ceased, except for two attacks, for twelve hours, then recurred, but finally ceased about 24 hours after the operation. General improvement now set in, and on the second day consciousness was quite regained. The urinary secretion was re-established and steadily increased. At the end of the second day high fever set in with signs of broncho-pneumonia on both sides, and the patient died.

It is noteworthy that during the two days following the operation the urine steadily increased in quantity, the albumin gradually fell from 4 per 1,000 to nil, and red blood cells disappeared.

Franck is of opinion that the marked improvement could be fairly ascribed to the operation, and moreover that the case

suggests that the latter should not be too long deferred. The nine cases previously reported are briefly recalled. In two cases the operation failed to influence the condition; in one of these the uterus had not been emptied, and the fits continued with even greater frequency till labour was induced, after which they subsided, and finally ceased four hours after. In two (including the writer's) a favourable influence was at least probable, while in the remaining six a strikingly rapid recovery followed. He believes that, allowing that the mortality so far has been high (30 per cent.), though most of the cases have been of a desperate character, experience has shown, as regards eclampsia persisting after delivery, that decapsulation is indicated. As to its employment before delivery the future must decide.

G. R. Mill.

Chronic Arthritis: a Critical Résumé on recent views on the Pathology of Arthritis.

Watson (Chalmers). *Edin. Medical Journal,* January, 1908. The author commences by describing the classifications of these diseases adopted by Garrod and Goldthwaite. Garrod classifies them into four main groups:—

1. Rheumatoid arthritis affecting chiefly the small joints and associated with marked muscular wasting and systemic symptoms.

2. Osteo-arthritis affecting the large joints.

3. Spondylitis deformans where the joints of the spine are specially affected.

4. Articular lesions associated with infectious diseases, *e.g.*, gonorrhœa, syphilis, etc.

Goldthwaite has five main classes—the atrophic arthritis, the hypertrophic arthritis and the infective arthritis corresponding to classes 1, 2 and 4 in Garrod's classification. He also describes a chronic villous arthritis and an arthritis of chronic gout.

The author maintains that no real classification can be arrived at until more attention is paid to the systemic changes and the changes in the osseous system as a whole. He points out that 35—39 per cent. of the cases studied by the Cambridge Committee for the Study of Special Diseases suffered from dyspepsia. He concludes by pointing out the changes in texture in the bones as shown by skiagrams, viz., (1) extensive rarefaction of the osseous tissue combined with (2) enlargement of the bone as a whole.

Garnett Wright.

The Treatment of Foreign Bodies in the Œsophagus.

Haecker (R.). *Muench. med. Wochenschr.*, 1907, No. 42. Five cases are recorded and commented upon. Three were treated by œsophagotomy, one dying from septic infection

already present before operation. The two others had the foreign body extracted with the expanding probang, the utility of which the writer warmly commends.

One case is of considerable interest—that of a woman who had retained a tooth-plate in her œsophagus for four months. An immediate radioscopy was negative, partly on account of the non-metallic character of the body and partly owing to faulty technique. The sound also failed to detect any foreign body, having evidently slipped past the concavity of the plate. Pain dysphagia and stridor increased, there was much mucous secretion often blood-stained, and the general state deteriorated. When admitted four months after there was marked stridor, dyspnœa, and diffuse râles, but no dulness. Severe coughing followed the taking of food. A radiograph taken obliquely showed an irregular shadow opposite the fourth dorsal vertebra. Œsophagoscopy showed the plate about the level of the left bronchus. A prolonged attempt at extraction failed.

Œsophagotomy was performed on the left side of the neck and the body localised with the finger. The plate had to be cut through with scissors and removed in two pieces. The wall of the gullet was ulcerated and air escaped by a perforation into the bronchus. An œsophageal tube was introduced from the wound, the latter packed and the patient fed entirely by the tube. Offensive discharge and suspicious signs in the left axilla led the surgeon to perform a gastrostomy. After this the bronchial fistula closed, the lung cleared up, and the patient made a good recovery. The writer regards the timely performance of gastrostomy as a chief factor in ensuring recovery when the foreign body has led to communication with the bronchus.

The fatal case was admitted three days after swallowing a piece of bone with a temperature of 102·5°, indicating that infection had already occurred. No foreign body was found either at operation or at autopsy, having presumably been pushed down by the sound at the time of operation.. The patient died of double pneumonia, and autopsy revealed much ulceration of the œsophagus with a perforation leading into an abscess cavity in the thyroid gland. This very early development of peri-œsophageal septic mischief is noteworthy, particularly in the case of a foreign body so small as to escape discovery, and suggests that no time should be lost.

The writer remarks that even irregular and jagged bodies may be safely and successfully removed with the expanding probang, as instanced by a tooth-plate and a cavalryman's spur-rowel in two of his cases. No practitioner should be without one.

G. R. Mill.

Torticollis.

BRADFORD and SEVER. *Boston Med. and Surg. Journal*, August 22, 1907.

THE writers present their conclusions from twenty-eight years' experience of the treatment of congenital and acquired muscular torticollis at the Boston Children's Hospital. Cases due to tuberculosis of the cervical vertebræ are not included. A congenital origin was ascertained in 46 out of the 90 cases. In none of these was there any history of hæmatoma or instrumental delivery. In reviewing the various theories in explanation of these congenital cases, they lean to the ischæmic theory of Josserand and Vianny which traces the origin to pressure on the middle sterno-mastoid artery by the surrounding parts and by the proximity of the thyroid cartilage; this results in muscle degeneration followed by sclerosis and contraction. The sternal head, which is the part usually affected, presents on examination an interstitial degenerative myositis similar to that found in the ischæmic paralysis of Volkmann.

As regards facial asymmetry, the atrophy is probably due to faulty nutrition from compression of the great vessels, and to the misplacement of the basi-occipital epiphyses and the effect of the weight of the skull on the other cranial and facial bones. In most congenital cases asymmetry is present at birth. All cases should be operated on between two and ten years of age to prevent permanent deformity of the face and head.

Operation is the rational treatment, by open division of the lower end of the sterno-mastoid. The incision should fall below the clavicle and should be free, reaching from the middle line to at least one-third of the length of the clavicle. It is essential that the whole muscle be divided. Each head is divided in turn on a director half an inch above its origin. No attempt should be made to divide the deep cervical fascia. The head is then forcibly overcorrected with shoulders fixed, and thus all contractions of minor muscles stretched. In children division of the scaleni is unnecessary. The wound is closed without drainage and protected with great care.

A plaster case is applied with the head overcorrected in all directions, and a window left for dressing. This is worn for not more than two months, after which a wire collar or Buckminster-Brown brace is worn for an average of four months. After-massage is as a rule not necessary. Recurrence took place in only two cases. The operation is therefore one which promises with ordinary care and after-treatment perfect results.

G. R. MILL.

Pathology.

On the Pathogenesis of Hirschsprung's Disease.

NETER (EUGEN). *Munch. Mediz. Woch.*, September, 1907.

THE writer's definition of Hirschsprung's disease is a constipation appearing in the early months of life, of an extraordinarily obstinate character, and frequently fatal. Anatomically its basis is a dilatation of the lower colon. Hirschsprung himself believed this dilatation to be congenital; others have spoken of an acquired "idiopathic" dilatation. The author of this paper believes the essential condition to be an unusually long sigmoid flexure, with a well-marked meso-sigmoid, giving the flexure an unwonted degree of mobility.

He reports a case which appears to him to lie between Hirschsprung's disease, and obstinate constipation of an uncomplicated character. A child aged nine months had absolute constipation for 14 days; no treatment by dieting drugs or enemata being sufficient to cause a motion. There was no vomiting; the abdomen was much distended. Palpation revealed nothing; percussion gave an absolute dulness over the greater part of the right side, and in the left iliac fossa. There was no tenderness, and no ascites. The rectum was empty. Oil injections were used with a long tube, and small thin motions were passed. For the next fortnight there was little change in the tumour, but gradually hard fæces appeared, followed shortly by spontaneous evacuations, and at the end of the month the tumour had disappeared, and the abdomen was normal in appearance and to palpation. A year later the child was fat, healthy and normal as regards its evacuations. The author suggests that the overloaded sigmoid flexure becomes impacted in the pelvis and undergoes secondary dilatation and hypertrophy.

H. THURSFIELD.

On the Behaviour of Elastic Tissue in Malignant Tumours.

RONDONI (P.). *Lo Sperimentale.* Anno lxi., Fasc. v.

DR. RONDONI finds that both degeneration and new formation of elastic tissue take place in association with the growth of cancerous tumours. The former he ascribes partly to mechanical and partly to chemical causes and the latter takes place in association with that formation of new connective tissue which occurs as cancer growths progress. He sees no reason for believing that the newly formed elastic tissue plays any beneficial or protecting part; indeed the irregularity of its formation seems to negative any such idea.

ARTHUR ROBINSON.

Variations in the Structure of Nerve Cells.

LEGENDRE (R.). *La Presse Médicale,* September, 1907.

M. LEGENDRE'S communication is for the main part a criticism of Dustin's work and conclusions.

M. Dustin attempted to prove that neurofibrils are extremely variable elements which differ in their characters according to the state of activity of the cell. During hyperactivity they may, according to M. Dustin, multiply. They may become finer and they may suffer a diminution of chromacity. During reduced activity they may acquire an increased affinity for silver salts. They may produce spindles and may be thickened and they may become granular. M. Legendre on the contrary believes that the neurofibrils are very stable, and that their apparent variability is due to the irregular results of the methods employed for their demonstration. ARTHUR ROBINSON.

On Implantation of the Parathyroids.

CIMORINI (A.). *Lo Sperimentale,* Anno lxi., Fasc. v.

BY experiments on dogs Dr. Cimorini found that the implantation in the peritoneum of the parathyroid bodies, which have been removed previously from the same animal, prevented in most cases the acute symptoms which so frequently follow the extirpation of the parathyroids. He found, further, that the implanted parathyroids showed for a time signs of activity, after which they gradually disappeared, and with the disappearance a cachectic state developed, which ultimately terminated in death.

ARTHUR ROBINSON.

Primary Tuberculosis of the Mouth from Infection with Perlsucht Bacilli.

WEBER (A.). *Muench. med. Woch.,* 1907, No. 36.

To the question raised by Koch's pronouncement in 1901, the writer contributes the account of a case in which the source of the infection was established "with great probability."

A woman of 29 was admitted with a painless swelling of the right angle of the mouth of four months' duration. Her previous health and family history were good. The skin adjoining the swelling was normal except for a dry scab at the angle of the mouth. The buccal mucous membrane opposite the right upper teeth from the angle of the mouth to the last molar was infiltrated and studded with small, irregular, sharply-defined ulcers from 1 to 2 mm. deep and covered with purulent deposit. Between these were numerous small reddish tubercles slightly raised. The swollen right tonsil showed similar changes, as also the pillars of the fauces on the same side which were infiltrated, and the uvula which was swollen to a thickness of 1 cm. The right half of the soft palate was studded with bright-red tubercles, but no ulcers. The glands below the jaw

and along the sternomastoid on the right side were enlarged, hard, painless. At the right apex there were a few fine crepitations only. There was a trace of albumin.

After repeated attempts typical tubercles and bacilli were demonstrated in scrapings from the ulcers, secretions of buccal mucous membrane, and in an excised gland.

The patient now volunteered the statement that for the last two years she had obtained milk from a certain cow, which was thereupon slaughtered and found to be full of tubercle. She was treated with tuberculin and the ulcers cauterised with lactic acid, but the disease progressed and crepitations appeared at the left apex. Surgical treatment was then carried out—scraping and cauterisation of the ulcers and excision of the glands—but failed to arrest the process. She went home and died three weeks later. No autopsy was made. Kossel obtained tubercle bacilli in pure culture from one of the excised glands and pronounced them to be of the bovine type.

As regards the other members of the family, no signs of tuberculosis could be detected by examination, including radiography, up to a year later. All the others had partaken of the milk only after boiling, while the mother had probably been given to tasting the raw article. Later information reached the writer that a grand-child of the cow-keeper had died of tuberculous meningitis. This child had been fed on milk from another but likewise tuberculous cow. At the same time a pregnant woman was affected with mouth-tuberculosis followed by phthisis. In neither of these cases however was the type of bacillus determined. G. R. Mill.

The Origin of the Upper Part of the Facial Nerve.

Partron (C.) and Minea (I.). *La Presse Médicale.* No. 66, August, 1907.

The examination of the mid brain and hind brain of a case in which the upper fibres of the facial nerve had been destroyed by a tumour furnishes, in the opinion of the authors, further proof that the fibres of the facial nerve which supply the muscles of the upper part of the face do not spring, as commonly stated, from the nucleus of the third nerve, but from the dorsal part of the common facial nucleus. Arthur Robinson.

The Effect of Experimental Jaundice upon the Secreting Power of the Duodenum and Jejenum, and on the Digestive Power of the Proteolytic Ferments and the Pancreatic Juice.

Alessandro (E.) and Mastroeni (L.). *Lo Sperimentale,* Anno lxi. Fasc. iv.

The authors find that jaundice produced in dogs by the ligature of the bile ducts does not interfere with the secreting action of

the cells of the duodenum and jejunum nor with the activity of the secretions, neither does it interfere with the response of the pancreas nor the capabilities of the secretion it produces. They also note that suppurative fever of a moderate grade when it intervenes in the experiment does not modify the result.

ARTHUR ROBINSON.

The Influence of Temperature on the Action of Healthy and Degenerate Muscle.

VERONA (F.). *Lo Sperimentale*, Anno lxi. Fasc. iv.

DR. VERONA finds that normal and fattily degenerated muscles are to some extent similarly and to some extent differently affected when subjected to raised and depressed temperatures. In both cases increased temperature increases and diminished temperature decreases the excitability. In both cases the amplitude of the curve of fatigue is increased and its extent is shortened, but in the case of degenerated muscle the excitability is more irregular and when degenerated muscle is fatigued it is more readily thrown into a state of tetanus than is normal muscle. In addition the tetanic curve produced by degenerate muscle is not maximal, and in its descending portion oscillations are present which are not met with in the case of normal muscle.

ARTHUR ROBINSON.

Experimental Hypertrophy of the Islands of Langerhans in the Pancreas in Phloridzin-Glycosuria.

LAZARUS (Prof. Dr. PAUL). *Muenchener-medizin: Wochenschrift.* 1907. No. 45, S 2222.

THE author sums up in this paper the effects upon the pancreas of diabetes, experimentally produced in guinea-pigs by the administration of phloridzin and adrenalin.

The phloridzin was administered to the animals either subcutaneously in daily doses of 1 cg. for about 100 days, or by the mouth for 8 months in almost daily doses of one g. The adrenalin was injected into the animals 2 or 3 times a week in doses of $^{1}/_{10}$—$^{3}/_{10}$ mg.

The administration of phloridzin was followed by the usual glycosuria (0·4% per diem measured by the fermentation-method), slowly progressive cachexia and emaciation, especially when the diet was rich in bread and cabbage; producing a loss in body-weight amounting to 30—40 %.

But in all the animals without exception, in spite of the wasting of the fat and muscles, there was a considerable hypertrophy of pancreas and of the adrenals. Histologically the hypertrophy of the pancreas was found to be due to a hypertrophy and hyperplasia of the islands of Langerhans, fairly uniformly distributed throughout the gland. The number of the islands

was increased from 2—10 times above the normal, as ascertained from healthy animals in similar conditions as to hunger, etc. The islands were mostly round, lying either in the middle or near the periphery of the lobules and were differentiated from the surrounding tissue by their sharp outline, brighter colour and homogenous cell-protoplasm as well as by their striking vascularity and rich capillary network. The increase in their size was such that in some cases they could be recognised by the naked eye as yellowish dots. The enlargement of the islands was to be attributed partly to their rich vascularisation and partly to a marked proliferation of the cells within them. These were normal in structure and of two kinds "lymphocytoid" and "epithelioid," the latter lying in close apposition to the capillaries and staining much more lightly with eosin than the granular cells of the acini.

There was only a slight development of connective tissue within the islands and no demonstrable investing capsule. The rest of the glandular structure and the ducts showed no alteration beyond hyperæmia.

Arteriosclerosis, and especially thickened patches in the aorta were noted in the animals experimented upon.

The tissue changes in the cases of adrenalin glycosuria were similar but not so marked as in the cases of phloridzin glycosuria. The author suggests that further experiments must show whether there are not other poisons or cachectic conditions giving rise to a similar hypertrophy of the pancreatic glomeruli.

The author concludes that these results furnish evidence in favour of

(1) The functional and anatomical independence of the islands as structures distinct from the surrounding glandular tissue.

(2) The possibility of experimentally increasing the number, size and vascularity of the islands alone.

(3) The probability that the islands play an important part in regulating the metabolism of the carbohydrates.

The author regards hyperplasia of the islands as the anatomical change produced in phloridzin-diabetes, and he considers that their hypertrophy is probably the outcome of increased activity though this cannot be proved.

It has been found that injections of phloridzin, which produces diabetes with hypo-glycæmia as opposed to the hyperglycæmia of diabetes mellitus, can cause in ordinary diabetes a temporary dimunition in the amount of sugar excreted. The experiments do prove that phloridzin can produce hypertrophy of the islands, but further therapeutical experiments are required to determine whether in this way, the islands can be made more active in cases of diabetes in man, in which disease the islands have often been found absent or pathologically altered.

R. S. Trevor.

Reviews.

"Squint and Ocular Paralysis." With a short account of the Disturbances of Muscle Balance. By E. Lucas Hughes, M.R.C.S., L.R.C.P. pp. 206. Illustrated by the author. London: H. K. Lewis. Price 6s. 6d. net.

The author having studied the various methods of measurement, testing and treatment in England and on the Continent has condensed into the work the points connected with the subject, and makes critical comparisons of the various systems in vogue. Descriptions are given of several instruments not in general use in this country, viz., the diploscope of Rémy, the five movement stereoscope of Javal and Buli, the stereoscope of Parinaud and others.

Great stress is laid on the importance of non-operative treatment of strabismus. The definition of heterophoria as a latent squint is considered to be a mistake, and the term heterotropia is reserved for cases in later life where there is a turn of an eye due to the giving up of the struggle to maintain single vision in heterophoria.

The book is decidedly interesting and instructive, although it cannot be said to be a great success as a literary production. The illustrations serve their purpose but several of them are rather crude.

"Surgery: Its principles and practice." By various authors. Edited by William Williams Keen, M.D., L.L.D. Vol. II. With 572 text-illustrations and 9 coloured plates, pp. 884. Philadelphia and London: W. B. Saunders Company, 1907. Price 30s. net.

The first volume of this System of Surgery was reviewed in the *Medical Chronicle* for April, 1907, and now the publishers announce both the second and third volumes as ready for sale. The second volume quite maintains the high standard set by volume one, and after a careful perusal of the work before us, we congratulate the editor on the success that is attending his labours.

The first chapter of volume II.—74 pages—is concerned with Diseases of the Bones, and is a clearly written account of what is so commonly made a difficult subject. Excellent illustrations are a strong feature throughout the volume, and in the present chapter are a great aid to the text. The second chapter—over

200 pages—is devoted to the consideration of Fractures; it is well arranged, and abundantly illustrated with really clear and distinct radiograms.

The next chapter deals with the Surgery of the Joints, and is divided into two sections (1) Pathology of Diseases of the Joints, and (2) Clinical Aspect. Chapters follow upon Dislocations, and on the Surgery of the Muscles, Tendons, and Bursae. Dr. Lovett has contributed the article on Orthopedic Surgery, and includes a full account of the so-called "bloodless" reduction of congenital dislocation of the hip-joint, illustrating this by a series of photographs which make it easy to follow the account in the text.

Chapters on the Surgery of the Lymphatic System, and on the Surgery of the Skin and its Appendages contain concise and accurate accounts of the subjects indicated. The remaining part of the present volume deals with the Surgery of the Nervous System. There is a good essay upon the pathology of the chief surgical disorders of the nervous system, and this is followed by a chapter on the Surgery of the Nerves, where we should have expected to find more than a passing reference to the interesting cases of cervical ribs. Within one chapter are treated the subjects of Traumatic Neurasthenia, Traumatic Hysteria, and Traumatic Insanity. A most suggestive section is that entitled Surgery among the Insane and the Surgery of Insanity. The choice of title for this chapter is not altogether happy, but the article itself is well worth reading, and it affords within a short compass a well-reasoned, temperate presentation of a difficult subject. The volume concludes with a chapter on the Surgery of the Spine.

As in the first volume, there is a full bibliography appended to each chapter, considerably increasing the value of the work, which is well printed and beautifully illustrated. The present volume will take a high rank in surgical literature.

"Modern Surgery, General and Operative." By John Chalmers Da Costa, M.D. Fifth edition, 872 illustrations, pp. 1258. Philadelphia and London: W. B. Saunders Company, 1907. Price 24s. nett.

Comparing the present edition with the fourth, which appeared in August, 1903, we find the volume has been enlarged by nearly 200 pages, whilst the illustrations have been increased by 165. There has been a thorough revision of the whole work, and this, with the addition of much new matter, fairly entitles the volume to the claim of being a fair exposition of modern surgery. The author has succeeded in presenting within the compass of a single volume an enormous number of the facts upon which

modern surgery relies; and has produced an authoritative work with very few faults, and with merely unimportant omissions.

The general arrangement of the book is good, and one can generally approve of the classifications adopted by the author.

The illustrations are generally good, and we can recommend the book to the student or practitioner as an exceptionally useful manual of Surgery.

"Functional Nervous Disorders in Childhood." By LEONARD GUTHRIE, M.D., F.R.C.P. London: Henry Frowde, Oxford University Press, 1907. pp. 300. Price 7s. 6d. nett.

"The Treatment of Disease in Children." By G. A. SUTHERLAND, M.D., F.R.C.P. Oxford University Manuals. London: Henry Frowde, 1907. pp. 311. Price 5s. nett.

THERE are very few medical writers whose writings are better worth reading than Dr. Guthrie's. His views are always those of common sense far removed from any faddism. He is always amusing, and we venture to think any one who takes up the above book will read it from cover to cover. The object of the book the author tells us "is to emphasize the truism that the neurotic child is the father of the neurasthenic adult" . . . "It is held that early recognition of these simple facts by medical men may help to lessen the prevalence of neurasthenia in the rising generation."

The subject of neurotic children opens up a wide field, if all the vagaries of the 20th century child are to be described. Dr. Guthrie deals with many of these which are not to be found in the ordinary text-book, such as the "fears of neurotic children," "fretting and home sickness," "disorders of sleep," "moral failings," in a masterly and amusing way.

The last chapter of this entertaining book is on "Idioglossia." We confess to a dislike to the word, as perpetuating the old confusion between tongue and speech. Macroglossia, Microglossia, Hypoglossal are familiar terms, but why Idioglossia? Dr. Guthrie says the term was used by Strabo, so we must submit. Certainly we prefer the term "defective speech" to cover all speech defects. We cannot agree with Dr. Guthrie that these speech defects are due to a "congenital deficiency of audition," that is, the child's hearing is deficient; we think the evidence points to the trouble being on the motor side.

We can very strongly recommend this book to all interested in child life.

Dr. Sutherland's book deals almost entirely with the treatment—including preventive—of diseases of early life. The first

chapter is devoted to the feeding of infants and children, then necessarily follows the treatment of the diseases of the alimentary canal. For some reason or other there is no chapter on the treatment of the zymotic diseases, including whooping cough. The practitioner is almost certain to look for what the author has to say about the treatment of whooping cough, only to find a blank.

Apart from some obvious omissions we have nothing but praise for the book, it contains the matured experience of one who has devoted many years to the study of disease in children.

"Cancer of the Stomach." By A. W. Mayo Robson, D.Sc., F.R.C.S. James Nisbet and Co., London. Price 4s. 6d. net.

This book expresses in an able, clear manner the modern surgeon's views on cancer of the stomach, and like the modern surgeon the book is eminently practical.

The following sentences gathered from various parts of the book give a fair idea of the doctrine imparted. "Whenever cancer of the stomach is suspected and the diagnosis cannot be verified by ordinary methods, an exploratory operation should be urged." "The risks of an exploratory operation for diagnostic purposes in an early stage of disease are practically *nil*." "It is now universally recognised that a radical operation for the complete and wide removal of the growth should be the aim of surgical treatment for cancer or sarcoma of the stomach." "These cases will suffice to show the beneficial results of gastro-enterostomy even in advanced cases of cancer of the stomach" for it is only in the cases too advanced for removal that the short-circuiting operation should be performed. The operation can be done with little risk, as including all my cases of posterior gastro-enterostomy for cancer performed during the past ten years, the mortality is only 3·4 per cent." "Regurgitant vomiting is now seldom and should never be seen, as it is entirely due to faulty technique."

Numerous cases are described throughout the book and the treatment recommended. The results of the gastrectomies and gastro-enterostomies performed are certainly very striking. But we fear that much time will elapse before the medical profession and the public agree to the exploratory examinations which are here so strongly urged. The great value of the work lies in the fact that it expresses clearly and tersely and without controversial discussions the personal experiences and opinions of one who has perhaps the greatest experience in stomach operations of all the surgeons in England.

"Modern Methods for securing Surgical Asepsis." By Ed. Harrison, M.D., F.R.C.S. Published by A. Brown and Sons, Ltd., London, Hull, and York.

The Author of this work is to be congratulated both on the ideals at which he aims and no less on the perfection of surgical asepsis, which appears to have been reached at the Hull Royal Infirmary, for it is on the technique employed at this Institution that the work is largely based. Every detail in the preparation of the patient, theatre, surgeon and his assistants appears to have been carefully thought out; in consequence, this little volume should prove of immense value to surgeons and nurses, and it would be well if every theatre sister would endeavour to digest the principles enunciated in the book.

There is a useful chapter on aseptic operations in private and another on asepsis in the wards. We have nothing but good to say of this work, and it may be strongly recommended to the notice of surgeons who are engaged in the equipment of a new theatre. In it they will find many important suggestions to guide their selection of furniture, lavatories, etc., as well as in the technique requisite for the attainment of good results

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"Diagnostics of the Diseases of Children." By Le Grand Kerr, M.D. Pp. 542, figs. 159. Philadelphia and London: W. B. Saunders Company. 21s. net.

This is a much larger and more ambitious work than either Dr. L. Guthrie's or Dr. Sutherland's while dealing with rather a narrow field. The illustrations are for the most part good and the text full of information. A less bulky volume could we think have been written on this subject with advantage.

"Atlas and Epitome of Diseases of Children." By Dr. R. Hecker and Dr. J. Trump of the University of Munich. Edited by Isaac A. Abt, M.D. Philadelphia and London: W. B. Saunders Company, 1907. 48 coloured plates and 147 black and white illustrations, pp. 453. Price 21s. net.

The great feature of this work is the coloured illustrations, which if not artistic, give the student a good idea of the subject. The text though by no means full, contains a good deal of condensed information. It is a book that might well find its way to the library of the practitioner and would be useful for reference.

"Treatment of the Diseases of Children." By CHARLES GILMORE KERLEY, M.D. Pp. 597, figs. 71. Philadelphia and London: W. B. Saunders Company, 1907. Price 21s. net.

DR. KERLEY is a well known writer on Diseases of Children and his experience as attending physician to the New York Infant Asylum well fits him for writing on the treatment of disease in children. The volume is bulky, and perhaps would gain by condensation; it is interestingly written and one feels in reading its pages that the information given has been tested by experience.

He relates some interesting experiences in the treatment of whooping cough in an epidemic occurring at the babies' hospital. He came to the conclusion that as far as drugs were concerned a mixture of Antipyrin and Bromide gave the best results. His formula is as follows:—

Antipyrin	gr. xviii.
Bromide of Soda	gr. xxx.
Syrup of Raspberries ...	ʒ v.
Water to	℥ ij.

Sig. One tea-spoonful every two hours or six doses in 24 hours for a child of 15 months.

This mixture is given for five days then omitted and quinine substituted for five days, when the antipyrin and bromide are again resumed.

We can thoroughly recommend the book, as containing much useful information not contained in the ordinary text-book.

"The Doctor in the Schools." By HACKWORTH STUART, M.D. (Lond.), F.R.C.S.E., D.P.H. (Camb.). London: H. K. Lewis. Price 1s. nett.

THOSE who are embarking, without previous experience, on the intricate task of the Medical Inspection of Elementary School Children, could not do better than be guided by this paper.

Dr. Hackworth Stuart deals—in the light of the Board of Education's recent memorandum—with Organisation, Methods of Record and Notification, all the physical defects and ailments most commonly met with in children, and how parents can best be got to remedy them; and he touches on the more difficult question of the mentally defective.

He recommends that the card system be adopted, and the cards kept at the schools. "On removal or promotion the scholar's card may follow him" (p. 9). To make this plan reliable a copy of each card must be kept at a Central Office for purposes of reference and statistics.

Dr. Stuart does not seem to appreciate this, and consequently

fails to draw attention to the vast amount of clerical work which Medical Inspection must involve.

The system of isolating dirty and verminous children at school (see p. 18) may impress parents but is surely cruel to the children whom it exposes to public obloquy and the jibes of their fellows.

These, however, are the only points which appear to need re-consideration in this excellent and opportune paper.

"Principles and Practice of Modern Otology." By JOHN F. BARNHILL, M.D., Professor of Otology, Laryngology and Rhinology, Indiana University, and ERNEST DE WOLFE WALES, B.S., M.D., Associate Professor of Otology, Laryngology and Rhinology, Indiana University. W. B. Saunders Company, 1907. Price 24s. nett.

THIS work aims at being a comprehensive exposition of the principles and practice of modern aural surgery. It is divided into 48 chapters, and the text is illustrated by over 300 figures, sketches and diagrams.

The first two chapters, dealing with the anatomy of the temporal bone and the physiology of the organ of hearing, deserve special commendation for the thorough and complete manner in which they have been written; while chapter III., on the bacteriology of the ear, is full of scientific interest, though practically, as the author correctly states, "it is one of the least important aids in diagnosis of aural diseases and their complications."

The methods of the examination of the patient are fully and accurately described in chapter XVII., but chapter XVIII., which deals with the examination of the function of the ear, is poor and unsatisfactory, especially in the account given of the special tuning fork tests, while Gelee's test is not even mentioned.

An elaborate and useful description of the Radical Mastoid operation is given in chapter XXX., but the indications for its performance might be set forth with more clearness and lucidity. This same chapter contains a good account of the surgery of the facial nerve.

In that portion of the book devoted to diseases of the labyrinth, Menière's disease is somewhat loosely classified, and the distinction between the true apoplectiform attack described by Menière and called Menière's *disease*, and Menière's *triad of symptoms* (which may arise from mischief of middle ear origin, suppuration in the labyrinth, or disorders of the central nervous system) is not definitely set forth with sufficient clearness.

It is somewhat surprising in a book of this scope to find no

mention of the operative treatment of intractable aural vertigo, and only an incomplete account is given of the surgical treatment of labyrinthine suppuration.

On the whole, however, the authors have produced a work which will well repay perusal, and the illustrations merit nothing but the very highest praise, both as regards number and quality. The binding, paper and type leave nothing to be desired.

"Diseases of the Larynx." By HAROLD BARWELL, M.B. Lond., F.R.C.S. Oxford Medical Manual Series. Pp. xii., 266. London, 1907. Price 5s.

THIS little book fulfils excellently the purpose for which it was written, to be a Manual for the Student or the General Physician or Surgeon. It is concise, up-to-date, and describes lucidly all the commoner and more important affections of the larynx, laying due weight on all practical points of diagnosis and treatment. The illustrations, though not very numerous, are clear. The book can be highly recommended to students and medical men, who are in want of a small Manual on Laryngology. Even the specialist will here and there find something new, for instance, the good and practical advice to hold, on examining the larynx, the tongue between the thumb and the middle finger (instead of the thumb and the index finger, as most laryngologists do)—the index finger thus being left free to rest against the upper incisor teeth, steady the head and, if necessary, retract the upper lip or moustache of the patient.

The author's is one of the few special treatises which mentions myxœdema of the larynx.

"A System of Medicine." Edited by WILLIAM OSLER and THOMAS MCCRAE. Vol. I. pp. xxxiv. + 937, with 74 illustrations. Price 30s. net. The Oxford Medical Publications, H. Froude.

WE must congratulate the Editors and the twenty-two contributors upon the production of the first volume of the new "System of Medicine," which owes its inception to the present Regius Professor of Medicine at Oxford. The work is to be completed in seven volumes, and if the high standard set by the first is maintained, the success of Professor Osler's "System" should be assured.

Beginning with a most interesting and suggestive introductory chapter on the evolution of internal medicine by Professor Osler, volume I. is mainly devoted to the consideration of diseases caused by physical and chemical agents, and by

protozoa and other parasites, and to certain constitutional diseases. The general level of excellence attained is so high that it may almost seem invidious to pick out a few of the articles for particular mention; but in these matters the reviewer is inexorably bound by limitations of space. An interesting and illuminating account of the problems of Predisposition and Immunity is given by Professor Adami; and this is followed by chapters on the diseases caused by physical agents, and by chemical agents, from the pens of Drs. Gordon and Edsall. Dr. Lambert describes the harmful effects of alcohol on the organism; his large experience leads him to believe that in the treatment of delirium tremens "alcohol should be absolutely withdrawn in all cases." The disorders due to vegetable parasites other than bacteria, such as actinomycosis, are well described by Dr. J. H. Wright; the protozoa are briefly expounded by G. N. Calkins, and the mosquitos by L. O. Howard. Dr. C. F. Craig has carefully written and admirably illustrated accounts of the malarial fevers, while black-water fever and trypanosomiasis are discussed by Dr. J. W. Stephens and Col. Daird Bruce respectively. The section on diseases caused by animal parasites has been entrusted to C. W. Stiles, and is well illustrated. Over a hundred pages have been devoted to a general consideration of normal and diseased metabolism, temperately and convincingly written by R. H. Chittenden and L. B. Mendel. Perhaps the best articles in the volume are those dealing with Diabetes insipidus, Diabetes mellitus, and Gout, by T. B. Futcher; they are short, yet clear and complete. Articles on Rickets by Dr. Still, and Scurvy by Dr. Hutchison, bring the volume to an end.

Professor Osler's "System" inevitably challenges comparison with the new edition of Allbutt's "System of Medicine," edited by Allbutt and Rolleston, that is in course of production at the present time. It will probably be half as long again as Professor Allbutt's system, and goes more thoroughly into the literature of the subjects with which it deals—both "Systems" naturally cover much the same ground. The first volume of Professor Osler's "System" is a large and handsomely appointed book, well illustrated, and not free from misprints: it may be warmly recommended to all medical men who are in search of an up-to-date and comprehensive book of reference.

"The Pancreas, its Surgery and Pathology." By A. W. Mayo Robson, D.Sc., F.R.C.S., and P. J. Cammidge, M.B., D.P.H. Philadelphia and London: W. B. Saunders Company, 1907. Price 21s. net.

The knowledge that lesions of the pancreas may give rise to such definite manifestations as to render a diagnosis of their

existence possible during life constitutes one of the more striking advances of medical science during recent years. "Before '49 there was no gold in California and before Reginald Fitz came from Boston to New York pancreatitis as a live question of diagnosis was practically unrecognised." The pioneer work of Reginald Fitz in the States has been supplemented in this country largely by the labours of the men who are responsible for the book now under consideration.

Already one of the present writers in conjunction with B. G. A. Moynihan has written a work on Diseases of the Pancreas which has been out of print for some time. In the present work the first nine chapters, extending to some 200 pages, are concerned with subjects more or less introductory, viz., with the comparative anatomy, the anatomy, the embryology, the anatomical anomalies, the surgical anatomy, the histology, physiology, the pathology, and with that interesting concomitant of many pancreatic lesions—fat necrosis; they are well written, as also is the remainder of the book, they are complete and lucid. The tenth chapter devoted to the chemical pathology of pancreatic lesions contains a very full account of the changes occurring in the fæces and urine, and a detailed account of those observations of Cammidge on the urine which have yielded the so-called "pancreatic reaction," a phenomenon which he does not claim to be pathognomonic but which—in his hands at least—when taken in conjunction with the chemical examination of the fæces and the clinical symptoms affords a valuable diagnostic criterion. The technique of the reaction has been again modified, and conducted according to this new method it affords, we are told, more certain results than in its original form; its precise significance is still under investigation.

The following chapter deals with the relation of pancreatic lesions to diabetes and glycosuria and contains a fairly complete account of the observations which have been made on the relations of the islands of Langerhans to this anomaly of carbohydrate metabolism.

The remaining 218 pages of the book are devoted to the clinical aspects of lesions of the pancreas, in the first place the general symptomatology and diagnosis are very fully and clearly dealt with, then the special features of injuries, inflammations—acute and chronic—cysts, and finally neoplasms. Throughout, the text is amplified by numerous illustrative cases where the condition of the pancreas has been investigated at operation. The subject of chronic pancreatitis, which perhaps more than the others may be regarded as having been brought into clinical prominence by the work of the two writers, deserves particular mention, the account given is very full and contains the clinical histories of many cases in which operative interference, undertaken as a therapeutic measure, has revealed the

sclerosed condition of the gland. Although the writers appear to have established chronic pancreatitis as a definite clinical condition, we find it difficult to reconcile the pathology of this lesion with the treatment advocated, viz., cholecystenterostomy, etc., or gastroenterostomy. These procedures are obviously directed to the condition which it is maintained are responsible for the occurrence of the pancreatic lesion, and unless they are still existent—when they would call for treatment apart from the pancreas—it is difficult to conceive how they would affect beneficially the disordered functional activity of the already sclerosed gland. It certainly seems to us that the writers are thrashing chronic pancreatitis a little too hard.

As a whole the work affords a complete account of diseases of the pancreas in so far as they are known, but its chief value is in its earlier portions which present a very readable account of the work which has been done on the anatomy, physiology and pathology of this gland.

"A Text-book of Treatment. Part I. Obstetrics and Gynæcology." By JOHN CAMPBELL, M.A., M.D., F.R.C.S. Eng. London: Sidney Appleton, 1908, pp. 279, 93 illustrations. Price 10s. net.

THIS is the first part of a text-book of treatment, edited by R. J. Ferguson M.D., F.R.C.S. Eng., consisting of three volumes devoted respectively to Obstetrics and Gynæcology, Medicine, and Surgery.

The chief departure from the ordinary text-book form is in the alphabetical arrangement, which certainly facilitates reference, but hardly gives the comprehensive and systematic view of the subject we usually expect from a "text-book." Still, as the book is intended especially for general practitioners there is certainly an advantage in the present arrangement. Turning to the matter of the work before us, the directions for treatment are clear and concise. No attempt is made to discuss all the different methods that have been proposed but the author gives those which he himself has found by experience to give the best results. We may differ with some of the methods described, but they are, as a rule, sound and practical, and deserving of attention if not of trial. Both medical and operative measures are described. The directions for securing *asepsis* are generally adequate. The treatment of *hæmorrhage* is well given, not omitting reference to compression of the abdominal aorta, which, it is stated "will often save the most desperate cases and give time for other measures to be carried out," it is, however, relegated rather to the end of the list of remedial measures.

The account of the treatment of *puerperal eclampsia* is, on

the whole, satisfactory, but the author would, in our opinion, be wiser to have recommended lumbar puncture and withdrawal of 10 or more c.c. of cerebro-spinal fluid, instead of advising decapsulation of the kidneys as a last resort in bad cases.

In dealing with *puerperal fever* the author adheres to the old distinction between sapræmia and septicæmia. He divides the latter into local and general, and the general into (1) lymphatic and (2) venous sepsis. He states that "as soon as urgent symptoms appear the vagina and uterus should be washed out with the flushing loop curette, a quart of 1 in 2,000 $HgCl_2$ being used at the beginning and 3 or 4 quarts of normal saline subsequently,"—he does not say the uterus is to be curetted, and if not why use the curette merely to douche out the uterus?

On the whole we can confidently recommend the book to those of our readers who need an up-to-date guide on this subject.

"The Care of the Body." By FRANCIS CAVANAGH, M.D. (Ed.). London: Methuen & Co. Price 7s. 6d. net.

THIS book is described as a volume of "The New Library of Medicine," and there is nothing to show whether it is intended for physicians or for the lay public. There is but little in it which is not already familiar to all medical men, and as it is written in a bright, chatty style, free from technical terms, we may assume that it is for the general public.

Much useful information is given regarding the various organs and functions of the body, especially those which are usually cared for during the performance of the daily toilette. Various chapters are devoted to sleep, baths, exercise and training, fatigue, clothing, the skin, hair, teeth, eyes, ears, nose, feet and hands, position and habit. On all of these subjects Dr. Cavanagh has something to say which is of interest and his advice is generally sound, though his extreme views on many debatable points will not be endorsed by the majority of medical men. In some cases he apparently can only see one side of the question, as, for example, in the chapter on clothing, where, in his anxiety to prevent compression of the abdomen, he entirely overlooks the equally serious danger of compressing the upper part of the chest by the suspension of all clothing from the shoulders. However, overstatement is perhaps more likely to attract attention than a moderate if sounder estimate, and this book will do much good if it rouses people to be more careful of their own bodies, and especially of the bodies of their children during the important period of growth.

The book is well printed in large type on thick paper, and will be read with pleasure and interest by medical as well as by lay readers.

145

THE MEDICAL CHRONICLE.

A MONTHLY RECORD OF THE

Progress of Medical Science.

THE VALUE OF OPSONIC METHODS IN DIAGNOSIS AND TREATMENT.

A report from the Clinical Laboratory, Royal Infirmary, Manchester.

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I.—INTRODUCTION.

At a time when there is much discussion in the medical press in connection with opsonins and therapeutic inoculation, very largely from a theoretical aspect, an account of the practical results achieved in cases treated at the Royal Infirmary, Manchester, during the last two years may not come amiss.

A special feature of this paper, and one which we should like to emphasize, for, so far as we know, it has not hitherto been adopted in any paper upon this subject, is that the effect ot the treatment is expressed, in every case where possible, not by us but by the physician or surgeon recommending the treatment and responsible for the case. Further, upon these independent opinions our deductions are based. We should like here to express our indebtedness to the members of the Honorary Staff for their ready response to our requests for these reports and their permission to publish their cases.

During the two years fifty-six patients in all have been treated by inoculations of bacterial vaccines, but many cases were investigated with a view to treatment which were found unsuitable, or in which, for some other reason, the treatment

could be not undertaken. This class includes those cases of malignant endocarditis in which death occurred before a vaccine could be prepared. Further, in a number of cases, observations of the opsonic index have been taken for diagnostic purposes. The first part of this paper contains an extended account of each case treated, whereas in the second part the treated cases have been grouped under diseases, and remarks made and inferences drawn where the number of cases is deemed sufficient to permit of this.

In addition to these fifty-six patients treated we have been concerned with many cases sent to us with a view to treatment or for diagnosis. In regard to the former, which for some reason or other were not treated, we give some account of those which have appeared to us to be of interest. In the case of the latter in only nine instances has an absolute diagnosis been ultimately arrived at by operation, post mortem examination, or the appearance of an unmistakable sign such as tubercle bacilli in the sputum, and these nine cases, only, are therefore given.

II.—CASES TREATED.

CASE I. *Tuberculous Adenitis.*

Oscar R., aged 17, with tuberculous adenitis of the neck, under the care of Mr. Platt. Duration "as long as patient could remember." Condition as described by Mr. Platt:

> "Patient was admitted to the Infirmary on March 7th, 1906, with numerous very large tuberculous glands on both sides of the neck. There were also some post-nasal adenoids and several carious teeth. The adenoids and carious teeth were removed on March 12th, 1906, no operation on the glands."

Opsonic treatment was begun 19th March, 1906. His tuberculo-opsonic index was ·97 and he received in all thirteen inoculations, the dose varying from $^1/_{3000}$ mg. to $^1/_{1000}$ mg. of tuberculin extending over a period of six months. He then, September 11th, 1906, gave up the treatment as his work prevented his regular attendance. A year later, August, 1907,

at our request, he came to the Infirmary when his condition was the same as when the treatment was stopped. Mr. Platt saw him and reported as follows:

> "August 12th, 1907. The glands are still palpable, but are very much smaller than when I first saw him. No operation on the glands is advisable and I should recommend a continuance of the opsonic treatment."

The actual diminution in circumference of the neck was $1\frac{1}{8}$ inches. In spite of Mr. Platt's advice the patient did not continue with the treatment.

Case II. *Tuberculous Dactylitis and Lupus.*

Emma H., aged 23, under the care of Dr. Bury, had swelling of the right index finger for one year and nine months, followed by swelling of other fingers and meta-carpals, and the appearance of ganglia on the wrists. She had also three lupus nodules on the face of nine months' duration, and also a tuberculous skin affection of the toes, and some enlargement of the cervical glands.

The patient's tuberculo-opsonic index when treatment was commenced on March 19th, 1906, was ·75. Eight inoculations of tuberculin were given during twelve weeks, the dose varying from $^1/_{3000}$ mg. to $^1/_{300}$ mg. She made very considerable improvement and when discharged on June 13th, 1906, the ganglia, with the exception of one, had disappeared, the cervical glands were very much smaller, the swelling of the metacarpals had considerably diminished, and the lupus nodules were less noticeable and less indurated. The right index finger was $\frac{1}{2}$ inch less in circumference than on admission. The other fingers were improved and the toe was practically normal.

Actual measurements in inches of fingers before and after treatment:

Right	March 15th.	June 7th.
Index	$3\frac{1}{2}$	3
Middle	$2\frac{1}{2}$	$2\frac{1}{2}$
Ring	$2\frac{1}{4}$	$2\frac{1}{4}$
Little	$2\frac{1}{2}$	$2\frac{1}{4}$
Thumb	$2\frac{1}{2}$	$2\frac{1}{4}$

Left	March 15th.	June 7th.
Index	$2\frac{1}{2}$	$2\frac{1}{4}$
Middle	$2\frac{3}{4}$	$2\frac{1}{2}$
Ring	$2\frac{1}{4}$	2
Little	2	2
Thumb	$2\frac{3}{4}$	$2\frac{1}{2}$

CASE III. *Abdominal Sinus.*

Sarah O., a middle aged woman, with an abdominal sinus, under the care of Dr. Donald.

This patient had an abscess in the wound after laparotomy. Staphylococcus was obtained from the pus in pure culture. She had one inoculation of 250 million staphylococci, and the wound healed soundly within six days.

CASE IV. *Tuberculous Adenitis.*

Frederick H., a man under the care of Mr. Platt, had two enlarged glands of two months' duration on the right side of the neck, one of which was discharging pus through an incision made some days previously. He was sent for treatment on the 23rd March, 1906. His tuberculo-opsonic index was 1·09. He had twelve inoculations of $^1/_{3000}$ mg. to $^1/_{750}$ mg. tuberculin during four and a half months, reinforced by occasional inoculations of staphylococcic vaccine. During the treatment he made very good progress but after omission of an inoculation of staphylococcic vaccine the sinus became reinfected, followed by a copious discharge of pus. After a further inoculation of staphylococcic vaccine the pus cleared up and a clear tuberculous sinus remained which ultimately healed, and when the patient was discharged on 13th August, 1906, the glands had almost disappeared. This patient was on the "waiting list" of admission for operation, but when seen by the Resident Surgical Officer on 31st May, 1906, his condition was so much improved that he was not admitted.

CASE V. *Tuberculosis Foot.*

Catherine B., a little girl under the care of Mr. Thorburn, was suffering from tuberculosis of the left metatarsus and tuberculous infection of the skin at the bases of the first, second

and third toes of the left foot. There was also slight swelling of the left ankle. There was a four years' history and operations had been performed on the malleoli leaving scars. We first saw her on 24th March, 1906, when her tuberculo-opsonic index was 1·07. She received twelve inoculations of $^1/_{3000}$ mg. to $^1/_{1000}$ mg. tuberculin, and was discharged 11th September, 1906, when the foot was soundly healed and the swelling had subsided.

Case VI. *Tuberculous Osteomyelitis.*

Mr. Ray's description and report, 28th July, 1907:

"A girl named S., about 19 years of age, was admitted to Mosley ward in March, 1906, suffering from tuberculous osteomyelitis of the right great trochanter. She had had several operations previously on the right hip for tuberculous disease. On March 19th, 1906, the diseased right trochanter was opened up and thoroughly scraped out. On March 26th I requested you to see the case with a view to treatment by inoculation, and on the same date you commenced a series of inoculations which were repeated at regular intervals up to May 15th. Improvement in the local condition was noted after the second inoculation, and by the early part of June the operation area was soundly healed, and the parts quite free from pain and tenderness. She was sent to the Cheadle Convalescent Hospital on June 8th. My impression of the treatment you carried out in this case was that the inoculations hastened the healing process and made this more sound than is usually obtained in the time."

We found the tuberculo-opsonic index on 26th March, 1906, to be of the blood ·94 and of the pus ·51. Six inoculations of $^1/_{1000}$ mg. to $^1/_{750}$ mg. of tuberculin were given. In this case cultivations of the pus were made and a pneumococcus isolated. The opsonic index to this organism was estimated on two occasions and found to be normal, so that this organism was regarded as being purely saprophytic, and tuberculin alone was used.

Case VII. *Miliary Tuberculosis of Peritoneum.*

Albert P., aged 28, under the care of Mr. Wright, had pain and swelling of the abdomen for nine months. Laparotomy

was performed and miliary tuberculosis of the peritoneum was found. On April 12th, 1906, thirteen days after the operation, his opsonic index to tubercle was found to be 1·30. No inoculation was therefore given. After a period, during which he was getting up and had a temperature of hectic type, reduced to normal by further rest in bed, his index was again estimated and found to stand at 1·20. His abdomen was then thought to be filling with fluid and there was a little oozing from the abdominal wound, his index was 1·60. He got up on this day with the result that next day his index was only ·80, evidently due to auto-inoculation. Stricter rest in bed, however, was followed by subsidence of the blood disturbance and inoculations of tuberculin were given. His abdomen became less swollen, adhesions appeared to be forming, the wound healed and he put on flesh. He got up from June 5th, 1906, without any rise of temperature following and without any blood disturbance shown by estimations of the opsonic index. He received five inoculations of tuberculin in all, the last on June 30th, 1906. The dose of vaccine given varied from $^1/_{3000}$ mg. to $^1/_{2000}$ mg.

Mr. Wright's report on the effect of treatment in this case is as follows:

"Effect doubtful as operation was performed." July 26th, 1907.

Case viii. *Tuberculous Adenitis.*

Beatrice M., aged 24, suffering from tuberculous adenitis of six years duration, was sent to us by Mr. Smith on 23rd April, 1906. There was a large mass of glands on each side of the neck and under the lower jaw, with some ulceration of the skin over one gland on the left side of the neck. The glands in both axillæ were also enlarged. The patient was lame from pain in left hip. Her tuberculo-opsonic index was ·60. On 28th May, 1906, after four inoculations of $^1/_{1250}$ mg. to $^1/_{1000}$ mg. tuberculin the glands had appreciably diminished in size. On June 11th the patient stated that the glands "had not been so well for six years," but she complained of more pain in the hip joint. This steadily grew worse, no more inoculations were given, and she was admitted into the Infirmary

on June 22nd with pain and swelling of the left hip joint. On August 4th the hip joint was excised and found to be the seat of caseous tuberculosis. She died on November 9th, 1906. There was no post mortem examination, but Dr. Anderton examined the synovial membrane removed at the operation and reported as follows:

> "Synovial membrane shows both chronic and more or less active inflammation, the latter having a focal distribution (like tubercle) but no sign of caseation nor giant cells. No tubercle bacilli found (but this does not of itself contra-indicate tubercle)."

A curious feature of this case and one for which, as yet, we have no explanation is that, though the glands were improving, the hip (presumably the seat of, more or less, quiescent tuberculosis as evidenced by the pains and limp and the fact that the histological report revealed old inflammation) should progress or relapse.

CASE IX. *Tuberculous Adenitis.*

Herbert C., aged 14, under the care of Mr. Platt. This patient had two inoculations of tuberculin before admission. The following is a concise account, written by Mr. Platt's House Surgeon, of the history of the case and progress of the patient whilst in the wards:

> "Admitted April 5th, 1906. Operation April 6th, 1906. Patient admitted complaining of abscess under the chin. About two years ago patient first noticed two enlarged glands about the size of marbles under the chin. The glands varied much in size, at times becoming smaller, but five weeks ago they became much larger. During three weeks previous to admission patient was treated with tuberculin but without effect. On admission there was a hard glandular swelling one inch in diameter situated one inch below lobule of left ear, also a large submental gland about the size of a hen's egg. Temperature normal. At the operation the glands were removed, the abscess scraped and packed with gauze. After the operation there was continuous discharge from the

submental wound and the patient left the hospital with this wound still discharging."

On May 7th, 1906, when we saw this patient again, not having seen him since April 3rd, 1906, he had a tuberculous ulcer beneath the chin, an enlarged gland beneath the scar of operation below the left ear of the same size as the one removed. His tuberculo-opsonic index was ·85. On May 8th, 1906, the opsonic treatment was resumed and fifteen more inoculations of tuberculin were given, the dose varying from $^1/_{5000}$ mg. to $^1/_{1000}$ mg. On October 15th, 1906, the gland was not palpable, the ulcer had healed and the treatment was discontinued. Mr. Platt saw the patient again on July 31th, 1907, and reported as follows:

"Ulcer soundly healed. Previously enlarged gland not palpable. A very small gland felt at level of hyoid on left side."

Case x. *Tuberculous Adenitis.*

Emma B., aged 26, under the care of Mr. Burgess, was sent to us for treatment on 29th March, 1906. She had had an enlarged gland on the left side of the neck for two months. Twenty-one inoculations of $^1/_{4000}$ mg. to $^1/_{1000}$ mg. tuberculin were given during ten months. When treatment was stopped on 4th February, 1907, there was some, but not very obvious, diminution in the size of the gland and the patient was advised to have an operation as we deemed the gland to be caseous. Since then we have been unable to obtain her subsequent history or to ascertain whether an operation was performed.

Case xi. *Tuberculous Synovitis of Elbow Joint.*

Thomas W., aged 27, suffering from tuberculous synovitis of the left elbow joint was sent by Mr. Ray on 27th March, 1906. His tuberculo-opsonic index was 1·06. Inoculations were commenced 28th March, 1906, and continued till 20th November, 1906. During this period he received seventeen inoculations of $^1/_{10000}$ mg. to $^1/_{750}$ mg. tuberculin. The patient also had some areas of necrosis of the skull and during the latter part of the time he was receiving inoculations suffered

from "fits." He was seen by Dr. Cunliffe who gave him potassium iodide. The patient denied syphilis. The "fits" ultimately ceased and the necrosed areas on the skull began to heal. Mr. Ray reports January 31st, 1908:

> "Thomas W., aged 27, attended my Out-patients suffering from tuberculous synovitis of the left elbow joint of three and a half months' duration and I sent him for treatment by opsonic methods in March, 1906. At that time the movement at the left elbow joint was limited, amounting to only ten degrees, and attempts to obtain further movement gave rise to pain. I saw the patient again to-day and it is difficult to find any trace of disease in the left elbow joint. The movement is free and there is no pain."

Case xii. *Tuberculous Cystitis.*

William H., 13, was sent by Mr. Burgess at the end of April, 1906. Suprapubic cystotomy had been performed a short time previously and the bladder found very contracted. No tubercle bacilli were discovered in the urine. His tuberculo-opsonic index was found to be uniformly low—·63 to ·77—on several occasions except twice when it was normal. He had two inoculations of $^1/_{1000}$ mg. tuberculin up to 23rd May, 1906, when he went to Cheadle Convalecent Hospital, and four more inoculations of $^1/_{10000}$ mg. to $^1/_{2500}$ mg. tuberculin between 2nd July, 1906, and 21st September, 1906, when he gave up the treatment. There was improvement in the general condition, the patient having put on flesh, and there was less pain. In May, 1907, he contracted scarlet fever and was removed to Monsall Fever Hospital, where he died. Dr. Arnold, Senior Assistant Medical Officer of Monsall Fever Hospital, writes:

> "The patient, Wliliam H., died on May 24th, 1907, and is entered as having died from renal tuberculosis. There was a suprapubic wound. A tumour was readily felt on the right side in the position of the kidney. There was impaired resonance at the left apex behind. Post-mortem there was renal tuberculosis on both sides."

Case xiii. Robert B., suffering from tuberculous disease of the knee joint with suppuration, under the care of Mr. Ray,

was seen with a view to treatment in May, 1906. He had a hectic temperature and his general condition was very bad. On May 5th, 1906, cultivations of the pus were made and staphylococcus and a bacillus isolated. The opsonic index to tubercle was found to fluctuate from 1·24 to ·49, and staphylococcus from 1·24 to ·78 showing the presence of auto-inoculations. The opsonic index to the bacillus varied from ·43 to ·21. In this particular case the patient was infected with three different organisms as shown by the indices. In the case of two of these organisms inoculations with their respective vaccines was contra-indicated on account of the auto-inoculations. A vaccine was made from the bacillus but to none of the varying doses employed could any immunising response be obtained. The patient's condition showed no improvement and on 17th May, 1906, amputation through the thigh was performed. On the 23rd May, 1906, the same bacillus was found in the discharge from the amputation wound and later on 26th June in a small pyæmic abscess below the right eye. The patient left the Infirmary on 3rd July, 1906, and died about a week later. The inoculations, nine in all, were continued to the time of the patient's leaving the Infirmary.

Case xiv. *Tuberculous Adenitis.*

Margaret B., suffering from cervical adenitis of ten years' duration, was sent for treatment by Mr. Platt on 10th May, 1906. She had large glandular swellings in the left submaxillary region and on the left side of the neck. Her tuberculo-opsonic index was ·71. She received eight inoculations of $^1/_{3000}$ mg. to $^1/_{1000}$ mg. tuberculin with considerable reduction in the size of the glands. She gave up treatment on 3rd September, 1906, and we are unable to obtain her subsequent history.

Case xv. *Tuberculous Adenitis.*

Edith B., suffering from enlarged glands of the neck and both axillæ of two and a half years' duration, was sent for treatment on 21st April, 1906 by Mr. Thorburn. Her tuberculo-opsonic index was ·51. She had nineteen inoculations of $^1/_{3000}$ mg. to $^1/_{1000}$ mg. with some very slight improvement. Treatment was discontinued on March 22nd, 1907. On subsequent

enquiry as to the progress of this patient with the object of ascertaining her condition we were informed that the patient died on February 15th, 1908.

CASE XVI. *Spinal Caries.*

Gilbert N., 24, suffering from spinal caries with psoas abscess, under the care of Mr. Wright, was seen in April, 1906. His tuberculo-opsonic index was ·60. Inoculations commenced 24th April, 1906, twelve days after operation on the psoas abscess. He had six inoculations of $^1/_{2300}$ mg. to $^1/_{1000}$ mg. tuberculin up to July 10th, 1906. On 15th June, 1906, he had a further scraping operation on the psoas abscess and was sent home on July 16th, 1906, with a sinus which the surgical note reports as "doing nicely." Mr. Wright reporting on the treatment in this case on 26th July, 1907, stated " effect doubtful as operations were performed."

CASE XVII. *Tuberculous Adenitis.*

William S., 19, under the care of Mr. Burgess, received nine inoculations of $^1/_{3000}$ mg. to $^1/_{1500}$ mg. from the 22nd May, 1906, to 8th November, 1906. His tuberculo-opsonic index was ·97. Duration of glandular enlargement one month. Mr. Burgess reports as follows on 25th July, 1907:

" The youth, S., whom I sent to you from my O.P. on May 14th, 1906, for treatment by opsonins, was seen to-day at the O.P. I have not seen him since I first sent him until now. The condition on May 14th, 1906, was as follows: On the left side of the neck was an enlarged and broken down gland at the angle of the jaw, with a larger gland (about the size of a tangerine orange) but not broken down just behind it, and a chain of smaller glands extending down almost to the clavicle. There were also two large glands just above the clavicle, and a small one of the supra-parotid set. I find to-day that the condition is very much improved. The sinus connected with the broken down gland has almost healed, the glands extending down to the clavicle cannot be felt, and the two large glands just above the clavicle are scarcely perceptible. He seems, in fact, to have obtained the benefits of surgical removal of the glands without the scar of an operation."

Case xviii. *Tuberculous Adenitis.*

Joseph L., age 15, under the care of Mr. Burgess. On January 30th, 1905, Mr. Burgess reported as follows:

"Joseph L., 15, was sent by me on May 17th, 1906, for opsonic treatment with an enlarged tuberculous gland below the left jaw of two months' duration. He received treatment for three and a half months, after which he ceased attending. He now has a small gland in left submaxillary region. He states that the gland was very much larger on first commencing treatment and that it has not increased at all in size since he gave up the treatment in August, 1906."

On May 17th, 1906, this patient's tuberculo-opsonic index was 1·05. During the three and a half months he was under treatment seven inoculations of tuberculin were given, the dose varying from $^1/_{5000}$ mg. to $^1/_{1000}$.

Case xix. *Cervical Adenitis.*

John S., aged 25. Tuberculo-opsonic index 1·00. The enlarged glands had existed for five years. After four inoculations, extending over a period of seven weeks, one of the glands was found to be soft and fluctuating. A small incision was made and pus evacuated. The resulting sinus rapidly healed leaving the small scar visible in the photograph. On February 18th, 1907, after nine months treatment, no enlarged glands were to be felt. In March, 1907, patient contracted influenza, which was followed by the appearance of a large gland immediately above the right clavicle. Inoculations were continued and the swelling had subsided by January, 1908, leaving some thickening. Dr. Wilkinson's report, January, 1908:

"I saw John S. before he received treatment by opsonic methods which commenced at the end of May, 1906. He had then enormous tuberculous glands on the right side of the neck extending from the ear to the clavicle. He now, January, 1908, has a smooth neck natural in appearance, save for the mark of a small scar. Some thickening can be felt in the situation of the previously enlarged glands but no enlarged glands can now be felt. His general health has improved and he has been able to continue his employment

(indoor) during the whole of the treatment. He has attained the disappearance of the glands without a surgical operation which would necessarily have left a large scar. I consider the result to be very good."

CASE XX. *Tuberculous Adenitis.*

Edward W., age 11 years, under the care of Mr. Ray. Opsonic index to tubercle = ·97. He received fifteen inoculations of tuberculin, the dose varying from $^1/_{3000}$ mg. to $^1/_{1500}$ mg. Mr. Ray's report, June, 1907:

"Edward W., 11 years old, was sent by me for opsonic treatment on 23rd May, 1906, suffering from a large left submaxillary lymphatic gland and one also enlarged below the left ear with considerable periglandular infiltration. I understand that the periglandular swelling disappeared but the glands did not diminish in size during the treatment by inoculations of tuberculin which extended over a period of seven months. Treatment by inoculation was then abandoned and the glands removed by operation at which the glands were found to be caseous."

CASE XXI. *Lupus Vulgaris.*

Maggie S., about 25 years of age, was an in-patient under the care of the late Dr. Harris, suffering from lupus vulgaris of the nose of five years' duration. There were three small nodules on the right ala nasi and there was an ulcer on the left side of the septum opposite the nodules. For three years she had been treated with x-rays with no benefit. When treatment was commenced her tuberculo-opsonic index was ·84. After eight inoculations of tuberculin, the dose varying from $^1/_{3000}$ mg. to $^1/_{1500}$ mg. had been given she abandoned the treatment, when the Resident Medical Officer of the Cheadle Convalescent Hospital, where the patient had been during the last five weeks of the treatment, reported:

"I think the patch of lupus on the outside of the nose is a little larger but do not think it looks quite so red. Internally I do not see any change."

Case xxii. *Tuberculous Adenitis.*

Nelly C., 14 years of age, under the care of Mr. Smith. Duration of glandular enlargement 18 months. Mr. Smith's report, February 12th, 1908:

"Nelly C. attended my out-patients in July, 1906, with tuberculous enlargement of the glands in the neck and was sent for treatment by opsonic methods at that time. She had then enlarged glands in the right submaxillary region causing a large visible swelling, and other enlarged glands along the right sterno-mastoid muscle. Some small glands were also felt in the left submaxillary region. I understand that she gave up treatment, owing to her occupation, in January, 1907, after considerable improvement. She returned for treatment by opsonic methods in August, 1907, and her condition then was: Visible swelling in right submaxillary region where there were two enlarged glands, the anterior the size of a small hazel nut and the posterior one inch in diameter. Two or three glands were felt deep to the sterno-mastoid at its upper part on the right side and two glands at the angle of the jaw the size of nuts, the lower slightly the larger, $\frac{1}{2}$ inch in diameter. A chain of small glands was felt posterior to the right sterno-mastoid. On the left side two small glands felt in the submaxillary region. I saw the patient again to-day. On the right side there is very slight fulness in the submaxillary region. The two glands there are reduced in size, the larger measuring now $\frac{3}{4}$ inch, and are freely movable and discrete. The glands at the angle of the jaw are a little smaller, those along the posterior border of the sterno-mastoid are now felt as small thickenings. No glands can be felt on the left side. Although the measured dimensions of the glands do not show great diminution the alteration in appearance is great, from large and disfiguring swellings to slight fulness only. The general health has also improved."

This patient's opsonic index when treatment was commenced was 1·06. She had thirteen inoculations of tuberculin, the dose varying from $^1/_{2000}$ mg. to $^1/_{1000}$ mg. up to January, 1907, and has had ten more ($^1/_{4000}$ to $^1/_{1500}$) since the treatment was resumed in August, 1907.

CASE XXIII. *Tuberculous Adenitis.*

Edith Y., aged 17, suffering from enlarged glands of six years' duration on both sides of the neck was sent by Mr. Smith for treatment by opsonic methods on July 4th, 1906. Her tuberculo-opsonic index was ·67. Between July, 1906, and January 30th, 1907, seventeen inoculations of tuberculin were given, the dose varying from $^1/_{5000}$ mg. to $^1/_{1000}$ mg. On January 30th, 1907, Mr. Smith reported as follows:

"This patient has been under opsonic treatment since July, 1906. She had marked enlargement of the glands of both sides of the neck (upper part of posterior triangle and sub-sternomastoid glands) larger on right side. As a result of treatment a considerable diminution in size of the glands has taken place. On the left side the glands are not now visibly enlarged but can be felt indurated. Right side swelling still visible. Several large hard glands can be felt behind sternomastoid. Case shews marked improvement in six months. I shall be interested to see how long it takes to further diminish them."

The treatment was continued until September 9th, 1907, ten more inoculations being given, but the glands remained "in statu quo."

CASE XXIV. *Tuberculous Adenitis.*

Henry W., aged 32, was sent for opsonic treatment on July 23rd, 1906, by Mr. Smith. He had tuberculous glands on both sides of the neck with tuberculous ulceration of the skin on the right side of the neck in the situation of a previous operation, and a thickened nodule attached to the skin at the back of the neck. This case was one of very long-standing and the patient had had many operations, some leaving sound healthy scars. When the treatment was commenced, July 23rd, 1906, his tuberculo-opsonic index was ·82 and between now and July 13th, 1907, a period of twelve months, he received twenty-one inoculations of tuberculin, the dose varying from $^1/_{4000}$ mg. to $^1/_{1500}$ mg. On July 13th, 1907, patient was seen again by Mr. Smith, who reported as follows:

"Much improved since I last saw him. Especially the

scar below and behind the right auricle which is smoother, less infiltrated and is now covered by slight scabs. A thickened nodule remains on the back of the neck—containing a little pus—and a sinus in the left sub-maxillary region leading down to a hard gland corpus. Elsewhere there is no sign of tubercular infection.

Since the above report was written thirteen more inoculations have been given with further slight improvement. The sinus referred to by Mr. Smith has been healed now for some months.

Case xxv. *Abdominal sinus. ?Tuberculous.*

Beatrice B., age 15, was sent for treatment by Mr. Ray on 20th July, 1906, suffering from a sinus in the right iliac region. The history was that six months previously she had swelling and pain in the right iliac region and five months ago was admitted into the Northern Hospital and an operation performed with persistence of a sinus above Poupart's ligament on the right side. When we saw her her opsonic index to tubercle was ·76 and to staphylococcus ·76. She had four inoculations of tuberculin, the dose varying from $^1/_{10000}$ mg. to $^1/_{3000}$ mg. and three inoculations of 100 m. staphylococci each, the last inoculation, $^1/_{10000}$ mg. of tuberculin, being given on September 5th, 1906. On 17th September, 1906, she came to see us again, having been seized with acute pain in the left side of the abdomen three days previously. The Resident Surgical Officer kindly examined her for us and she was admitted under Mr. Thorburn. She then had swelling in the left iliac fossa, which was incised and drained, pus was evacuated which, on examination, shewed no tubercle bacilli. On October 12th, 1906, she was discharged to the Cheadle Convalescent Hospital with a sinus in the left iliac fossa. We heard nothing more of her until February, 1908, when we found she had been admitted under Mr. Platt with a ventral hernia in the situation of the scar in the left iliac fossa. In addition there was the old sinus in the right iliac fossa, a second sinus in the middle line in front and a large ulcer at the left of the sacrum, communicating with an intra-pelvic abscess.

CASE XXVI. *Lupus Vulgaris.*

Rachel G., aged 19, was sent by Mr. Ray on August 21st, 1906, with a patch of lupus about the size of a shilling on the left forearm. Duration about five years. Her tuberculo-opsonic index was ·52. She had four inoculations of $^1/_{2000}$ mg. to $^1/_{1500}$ mg. tuberculin over a period of three and a half months. At the end of this time the patch of lupus was reduced to the size of a sixpence. She then changed her employment and we have been unable to trace her since.

CASE XXVII. *Furunculosis.*

Jessie Lilian D., age 17, suffering from Boils was sent for opsonic treatment by Mr. Ray on August 23rd, 1906. Her staphylococcic opsonic index was ·71. She had three inoculations of staphylococci, two of 250m. each and one of 500 m. Mr. Ray saw her again on July 30th, 1907, and reported as follows:

> "This morning in the Out-patient Department of the Manchester Royal Infirmary I saw Jessie Lilian D., aged 17 years, who was a patient under my care at the Infirmary in August of 1906, when she had been suffering for three months from repeated crops of boils. She was sent to you for treatment, and had three inoculations, the last on December 11th, 1906. From that date she has had no return of boils, and to-day is in an excellent state of general health."

CASE XXVIII. *Tuberculous Cystitis and Epididymitis.*

George F., aged 30, under the care of Mr. Burgess. We first saw this patient on September 17th, 1906. He had increased frequency of micturition for 8 months, "passing water every half-hour," with some pain. The urine contained pus and sometimes blood. There was a nodule in the right epididymis. His tuberculo-opsonic index was 1·00. On February 4th, 1907, after nine inoculations of tuberculin ($^1/_{2500}$ mg. to $^1/_{1500}$ mg.) had been given, Mr. Burgess reported as follows:

> "I saw my patient, George F., this morning. His general appearance is much improved and he tells me that he has gained over one stone in weight. The frequency of micturi-

tion is considerably less, he can hold his urine for two and even three hours, as against half an hour when last I saw him, and the urine is almost clear. The nodule in the right epididymis is smaller and distinctly softer.

All the symptoms and physical signs seem, in fact, to have improved markedly under the 'opsonic' treatment."

Patient continued the treatment regularly up to July 11th, 1907, receiving nine more inoculations of tuberculin. Since then we have seen him at irregular intervals and given him an occasional inoculation.

His urine is now clear. No tubercle bacilli are to be found and he is holding his urine from three to four hours and longer if necessary.

CASE XXIX. *Tuberculous Adenitis.*

Catherine H., a patient under the care of Mr. Wright, was suffering from tubercular adenitis of twelve years standing During this period she had eight operations on the glands, the last, one year before we saw her on the 19th September, 1906, when the condition was as follows:

A chain of small glands extending from the mastoid to the clavicle and a large gland, which had remained unaltered for one year, at the origin of the sternomastoid on the right side. A large supra-parotid lymph gland on left side and some small glands on the left side of the neck. Two large glands above the left clavicle. Her tuberculo-opsonic index was ·65. In all twenty-seven inoculations of tuberculin have been given, the dose varying from $^1/_{5000}$ mg. to $^1/_{1000}$ mg. There have been occasional intervals of about six weeks when she could not attend owing to her duties. Her condition now is much improved. The chain of glands from mastoid to clavicle on the right side are considerably less in size, and the large gland at the origin of the right sterno-mastoid is greatly reduced. The supra-parotid gland on the left side has practically disappeared. The two large glands above the clavicle are felt as small flat thickenings. There is still a fairly large left submaxillary lymph gland. Patient states that her general health has never been better than it is now. On July 26th, 1907, ten

months after treatment, Mr. Wright expressed the opinion that there was great improvement, and again on February 7th, 1908, that she looked very well and the improvement in general health since the inoculations were begun was very marked indeed.

CASE XXX. *Furunculosis.*

Harold H., aged 12, under the care of Mr. Smith, was sent by the Assistant Surgical Officer for opsonic treatment suffering from boils. The history was that he had had fifteen boils in three weeks. On coming up for treatment, October 31st, 1906, he had a boil over the sacrum. His opsonic index to staphylococcus was ·52. He received two inoculations of staphylococci of 250 m. each. Four days after the first inoculation he was free from boils. The Assistant Surgical Officer on November 24th, 1906, reported that the patient was "Quite better." This patient was told to come again if any other boil appeared, but has not returned.

CASE XXXI. *Tuberculous Iritis.*

Georgina H., age 14, suffering from tuberculous iritis of six months' duration, was sent by Mr. Ray on November 2nd, 1906, for opsonic treatment. She had been under treatment at the Royal Eye Hospital without improvement. Her opsonic index was ·89. She received ten inoculations of tuberculin ($^1/_{1750}$ mg. to $^1/_{1500}$ mg.) during five months. At the end of this time she gave up the treatment on account of the distance she lived from the Infirmary.

In response to our request, Dr. Clegg, under whose care the patient was at the Eye Hospital, reports as follows:

> "I remember the girl you wrote me about but have not seen her for some months. I considered there was marked improvement in the eye condition at the end of the period of treatment by you. It had been very obstinate before." August 2nd, 1907.

CASE XXXII. *Furunculosis.*

Elizabeth R., aged 18, was sent by Mr. Burgess on 20th November, 1906, for opsonic treatment. She had one boil on her back and one on her abdomen of seven days duration. Staphylococco-opsonic index ·73. Two inoculations, one of 250

million, the second of 500 million staphylococci were given. On 29th November, 1906, she was discharged well. This patient was written to on February 14th, 1908, with the object of learning whether any more boils had appeared, but has not replied.

Case xxxiii. *Tuberculous Sinuses and Adenitis Neck.*

Harold T., age 17, under the care of Mr. Smith, was sent, suffering from tuberculous sinuses and adenitis, for opsonic treatment on 31st December, 1906. He had numerous sinuses in the neck and extensive infiltration of the tissue around. There was a large gland breaking down at the angle of the jaw. The duration of the disease was four years. He had never had any operation performed but he had frequent abscesses which burst of themselves. His opsonic index was 1·03. He received twelve inoculations of tuberculin up to July 17th, 1907, the dose varying from $^1/_{3000}$ to $^1/_{1500}$ mg. On July 17th, 1907, Mr. Smith reported as follows:

> "Harold T. Sinuses and infiltration in both submaxillary, infra-parotid and upper half of posterior triangle regions extending backwards on right side almost to middle line of neck. One sinus in left anterior triangle is discharging freely and above it is a large scar undermined and suppurating (incised to-day). There was originally much thickening of the tissues but under the inoculations this has greatly diminished. Some months ago patient could only rotate and flex the head to a very small degree owing to this infiltration. Now he can do both movements freely without pain. All the extensive cicatrices in the skin are improved in condition and drying up. Patient very anæmic; works in engineering works."

Since then the treatment has been regularly continued, eleven inoculations of tuberculin have been given from $^1/_{8000}$ to $^1/_{3000}$ mg. with an occasional inoculation of staphylococcic vaccine with some beneficial effect in that the infiltration has still further diminished but not completely subsided, and the cicatrices appear sounder. He is not now anæmic and is able to follow his employment.

CASE XXXIV. *Tuberculous Ulceration Nasal Septum.*

Peter N., age 44, came for treatment on January 2nd, 1907, with ulceration and perforation of the nasal septum. His tuberculo-opsonic index was ·43. Ten inoculations of $^1/_{1000}$ to $^1/_{1000}$ mg. of tuberculin were given over a period of six months without any alteration in his condition. At the end of this time patient ceased to come up for treatment.

CASE XXXV. *Tuberculosis of Ureter and Cystitis.*

Ellen W., aged 30, suffering from tuberculosis of the left ureter and cystitis, was sent by Mr. Burgess on January 18th, 1907. Her tuberculo-opsonic index on that date was ·89, on 22nd January 1·22, on 23rd ·74, and on 28th January 1·20. This fluctuation in the indices showed that the patient was receiving auto-inoculations and contra-indicated injections of tuberculin. The patient went home and was advised to rest for a time as we considered that the auto-inoculations might then cease and suitable doses of tuberculin be injected at suitable intervals with benefit. On 26th February, 1907, her tuberculo-opsonic index was 1·06, on 28th February 1·14, and on 1st March 1·10. As these indices showed no evidence of auto-inoculations, injections were commenced on 1st March, 1907, and she has had sixteen inoculations of $^1/_{3000}$ mg. to $^1/_{2000}$ mg. up to the present time. Mr. Burgess gives the following account and report:

"I first saw Ellen W., aged 30, in January, 1907. She then complained of the passage of the blood in her urine and frequent micturition. On vaginal examination, a swelling had been felt by Dr. Donald in the base of the bladder leading to the conclusion that there was a tumour there. Examination of the bladder with the cystoscope on January 12th, 1907, revealed ulceration of the bladder and a condition of the left ureteral opening usually associated with tuberculosis. The bladder was contracted and held 3 to 4 ozs. of fluid. Under anæsthesia the left ureter could be felt thickened and could be traced per abdomen up to the left kidney, so that it became clear that the tumour felt per vaginam was the thickened ureter in the base of the bladder. Later, pain

on micturition appeared and pus and tubercle bacilli were found in the urine. I sent her for treatment by opsonic methods on January 18th, 1907, when she was passing her urine every hour to an hour and a half with considerable pain and occasionally with blood. Her weight was 8 stones $4\frac{3}{4}$ lbs. I saw her again to-day, February 20th, 1908, when she says she is feeling strong and well. She can hold her urine for three to four hours, passes no blood and is quite free from pain. Her weight has increased to 9 stones $7\frac{3}{4}$ lbs. Per vaginam: the thickening of the ureter in the base of the bladder is scarcely perceptible. Per abdomen: the thickened ureter can still be felt—the left kidney feels enlarged and mobile.

I considered this case was much too advanced for any question of operation when first I saw her, and considering the improvement that has undoubtedly taken place under the opsonin treatment I would strongly advocate a continuance of its use."

This patient is still under treatment.

CASE XXXVI. *Furunculosis.*

James W., age 51, was sent to us by Dr. Bury on March 19th, 1907, for treatment for Boils. His opsonic index to staphylococcus was ·93. He had two inoculations of 250 M staphylococci each.

On January 29, 1908, ten months afterwards, Dr. Bury saw the patient again and reported as follows:—

"James W. twelve months ago had three boils on right arm; all appeared at once, he had two inoculations, and no boils have appeared since.

CASE XXXVII. *Furunculosis.*

James L. was sent from Dr. Brockbank's out-patients by the Assistant Medical Officer on March 28th, 1907, with a history of having suffered from boils for the last three years, and that they had become more frequent during the last six months, "one occurring every week." When we saw him he had one boil at the back of the neck. He received one inoculation of 250 M. The Assistant Medical Officer saw the patient again on August 2nd, 1907, and reported as follows:—

"James L. first attended the Medical O. P. Dept. on November 1, 1906, complaining of stomach trouble. I saw him early in December when his chief complaint was the persistence of a series of boils appearing in various parts of his body—a new one arising at least every week. For four months these were treated by means of tonics, ointments, and calcium sulphide given in a pill without any improvement in the local condition.

On March 28th, 1907, he was seen by Dr. Loveday, who took charge of him, giving him one injection. I saw him again on August 1st, and find that he has been completely free for some months, only one boil having appeared in the last few days.

The patient is highly delighted, saying that he has not been so free from skin eruptions for at least three years."

This patient returned in January, 1908, with a boil on the back of his neck and stated that since the last inoculation 9 months ago he had only had one boil which quickly got well.

After two more inoculations of 250 M staphylococci he was again free from boils and has remained so up to the present time.

CASE XXXVIII. *Tuberculous Adenitis.*

Alfred M., age 7, suffering from Tuberculous Adenitis of eight months duration was sent for treatment by Mr. Smith on 2nd April, 1907.

He had then a string of abscesses under the jaw extending from ear to ear and a chain of small glands on each side of the neck beneath the sterno-mastoid. There was also a large gland below the left ear.

His opsonic index was 1·12 on April 2nd, 1907, and between now and July 13th, 1907, he had seven inoculations of $^1/_{2000}$ to $^1/_{1500}$ mg of tuberculin. On July 13th, 1907, Mr. Smith reported:—

"Glands generally much smaller. Submaxillary chain of scars is smoother. One gland beneath right auricle is suppurating and there is a large hard gland below left auricle."

The treatment has been continued. Ten more inoculations

of $^1/_{5000}$ to $^1/_{3000}$ mg of tuberculin have been given and a further report by Mr. Smith, dated February 15th, 1908, states:—

"Alfred M. There is now some thickening in place of previously suppurating gland below right auricle and the scar over it is sound.

The submaxillary chain of scars are as before. The gland below the left auricle is now small. There is a small gland in left submaxillary region attached to a scar. All the other glands have disappeared."

CASE XXXIX. *Tuberculous Adenitis.*

Alf C., age 18, was sent by Mr. Smith for treatment for Tuberculous Adenitis and tuberculous ulceration of the skin on April 18th, 1907. There was at that time ulceration of the skin on both sides of the face extending under the chin, ulceration on the neck with much induration and scar tissue and several enlarged glands. The condition had persisted for three years and he had had a scraping operation in February, 1906.

His tuberculo-opsonic index was ·90. Six inoculations of $^1/_{4000}$ to $^1/_{2000}$ mg of tuberculin were given up to July 11th, 1907, when Mr. Smith reported:—

"Considerable improvement in the general condition of the neck, the thickening and sclerosis has decreased in both submaxillary regions, on the left side there is a small supra-parotid glandular abscess—two glands suppurating in the posterior triangle. The scars in the submaxillary regions are covered with slight scars, but softer and less infiltrated than before. On the right submaxillary region the ulcers have largely healed. There are two cicatrices still containing serous and sero-purulent fluid."

Since then he has received ten more inoculations of $^1/_{5000}$ mg of tuberculin, and a further report written by Mr. Smith and dated February 13th, 1908, states:—

"The thickening of skin and subcutaneous tissues has greatly decreased. The cicatrices throughout are softer and more moveable—with much less infiltration.

The left supra-parotid ulceration still remains and there is a small sinus in the right submaxillary region connected with the caseous remains of a gland. The other sinuses and ulcers are now all healed."

(To be continued).

SOME CASES OF PROTRACTED NON-ASSIMILATION OF FAT, OCCURRING IN CHILDREN, ASSOCIATED WITH DEFECT IN THE BILIARY PIGMENT IN THE FÆCES, BUT WITHOUT JAUNDICE.

By A. A. Mumford, B.Sc. (Vict.), M.D. (Lond.).

The following cases belong to a group which may advantageously be studied in connection with changes in the biliary pigment as this is found in the fæces.

For the suggestion which resulted in the elucidation and the cure of the first case, which occurred nearly three years ago, I was indebted to the late Dr. Dreschfeld.

I believed at that time that the condition was an extremely rare one, but increased watchfulness has brought into notice several similar cases—of less severity it is true—so that I am led to believe that in its milder manifestations it is exceedingly common and only the most aggravated forms are really rare.

The essential conditions appear to be protracted ill-health extending over months and years, severe anæmia, and defective growth, associated with a faulty metabolism of fat, which is proved by the presence of a large excess of undigested and unaltered fat in the stools. The stools themselves are copious, frequent, and loose, evil-smelling, and clay-coloured or very light brown. At first they seem to be covered with an oily liquid which rapidly congeals and leaves an appearance as if the motion had been varnished. They are often putty-like in colour, and are either without bile pigment, or if the pigment is present it is considerably modified. There is no jaundice present. As there is occasionally a small trace of glycosuria, a diagnosis of chronic interstitial pancreatitis has been given. For reasons to be presently stated I think the diagnosis is insufficient.

The abdomen is very distended, and the general nutrition of the child is often so seriously impaired that growth may be not only materially interfered with but absolutely arrested,

so that a state of infantilism results extending over many years. When once the assimilation of fat is secured and the accompanying catarrh diminished or cured, the symptoms may entirely pass off; and, in some of the cases which I have been able to follow, after a prolonged course of special treatment, the disease was arrested, and the ordinary physiological processes were found sufficient to maintain the health of the child.

Case 1. Bessie D., born June, 1900, was quite healthy and well nourished at birth when she weighed 7 lbs. There was a brother 2 years older than herself, also in good health. Parents in good circumstances, and, with the exception of a lifelong psoriasis on the father's side, there was no evidence of constitutional weakness in either of them.

The child passed through a normal infancy till she was two years of age and was able to toddle about. There had been no sign of rickets.

The illness began suddenly, June, 1902, with severe constipation, black motions, loss of weight, and great weakness. The child became quite unable to get about. After about a week the constipation gave place to the passing of copious clay-coloured loose motions; the bodily weakness steadily increased, so that the child had to be carried on a bed. This condition had continued for fifteen months when the child became alarmingly ill, with collapse and acute abdominal symptoms. The gravest symptoms of collapse lasted about twenty-four hours, and then followed a rally and a slight improvement in the general health. Considerable prostration still remained, and the child was quite unable to stand or even sit up in bed for many weeks. The motions continued loose and copious, gray in colour and oily in consistence, and were now passed three or four times a day. The abdomen was distended and, from what I can gather from the history given me by the mother, the case was diagnosed as abdominal tuberculosis.

In spite of constant changes to the seaside, the usual tonics and careful dietary, only very little progress was made. The child was still unable to walk more than a few paces or even to sit up in bed for more than a very short time, owing partly to general muscular weakness and partly to joint pains, especially

in the knees and ankles. There was complete arrest of all growth, and a continuance of the general weakness and diarrhœa till March, 1905, when the disease had lasted nearly three years. This was when the child first came under my observation. At that time the muscular debility was very marked, especially in the thighs and legs. If the child attempted to walk she did so with an exaggerated flexion of thigh, and a consequently high-stepping, deliberate gait, as if she was afraid to put her feet down. The only other suggestions of rickets were flat-footedness and the peculiar conformation of the bones of the skull. There was no enlargement of the joints and no marked beading of the ribs. There seemed to be diminution of fluid in the joints which grated like old gouty joints. The hair was scanty, dry, brittle, lustreless, and feebly nourished; nothing peculiar in the teeth. The motions were pale and clay-coloured, of the consistency of white paint, and had a peculiar glazed look. They were entirely without firmness, very copious, and frequently showed bubbles of fermentation. They were very offensive. The urine contained no albumen and gave no reaction to Fehling's test. There was no jaundice. The child weighed 28 lbs. instead of 39½ lbs., which is the average for a girl of her age. She was put on mercurials as a possible antispecific and also to arrest the fermentation by exciting biliary secretion. The diet was beef juice, cream, maltine, and cod liver oil, port wine, etc., and massage was ordered.

At the end of three months, July, 1903, it was found that the motions were not so frequent, the fermentation had diminished, and the joint pains were lessening, so that the child was getting about a little more. She could not run or jump, but walked with a limping gait. She gained about 1 lb. in the three months. By September, 1905, the child had been to Buxton and a fresh catarrh of the bowels seemed to have supervened. She lost 3 lbs. in weight and again became very weak, flabby and prostrate. She slowly regained her previous condition. In March, 1906, Dr. Dreschfeld saw the child and suggested that the illness might be due to pancreatic disease. He advised chemical analysis of the fæces, and the treatment by

pancreatin. An analysis of the fæces was made by Dr. Cammidge of London, who found 57·4 per cent. total fats instead of 15 per cent., and 33·9 per cent. was fatty organic material instead of 60 per cent.

The examination shewed that there was very little digestion of the fatty foods, for of the total fats in the fæces six-sevenths was still quite unaltered, and only one-seventh had undergone transformation into fatty acids. In his report on the case, Dr. Cammidge wrote: "The well-marked pancreatic reaction in the urine, the presence of calcium oxalate in the centrifugalized deposit, the large amount of unabsorbed fat, of which the greater part is neutral, in the fæces, all point to there being a well-marked lesion of the pancreas. This is probably of the nature of a chronic interstitial pancreatitis, which has advanced to such a point as to have produced some effect on the islands of Langerhans, giving rise to the trace of sugar to be found in the urine." I had previously tested with Fehling's solution but obtaining no reaction I had excluded glycosuria. Dr. Cammidge wrote further "the absence of bile from the urine, and the well-marked reaction for stercobilin is probably not due to an obstruction of the common duct. . . My view of the case is that there has been a long-continued gastro-intestinal catarrh which, having spread along the pancreatic duct, has set up an interstitial pancreatitis. This has now advanced to such a point as to involve the islands of Langerhans, and is consequently producing a slowly advancing pancreatic diabetes. Hence, in my opinion, the trace of dextrose in the urine makes the prognosis a grave one. I think, however, that with care and diet and general treatment, the issue may possibly be postponed for a considerable time. My experience of diabetes following chronic pancreatitis is that the progress of the disease is, as a rule, slow, but I can only speak authoritatively of adults, as up to the present I have not had a case in a child."

In consequence of this report various forms of pancreatic extracts were tried, but the best results were obtained by small pilules each containing 1 grain of pancreatin, two after each meal. Within a few days a change was brought about, the motions became less frequent in number, firmer in consistence,

and of a normal colour, such as they had not been for four years. The general appearance of the child completely altered. She became lively, bright and energetic, and came running into the room without halt or limp. The pain in the joints entirely disappeared, and the scanty, thin, short hair began to grow thicker, stronger and longer. The muscles of the legs began to fill out. The abdomen lost its swollen condition. The increase in weight was at first very slow, but as the subcutaneous fat began to appear the normal rounded outline of early childhood developed. The complexion lost its sallowness.

In July 1905, the weight was 28¼ lbs; September 1905, 25¾ lbs; December 1905, 30 lbs.; March 1906, 31 lbs.; normal weight would be 43 lbs. Pancreatic treatment was then begun. By September 1906, the weight had increased to 34 lbs.; February 1907, 36½ lbs.; July 1907, 39¼ lbs.; March 1908, 43½ lbs.; normal 52 lbs. Before pancreatic treatment the child was only 70 % of its normal weight. After 18 months it had grown to 83 % of the normal weight.

The next case came to the Greengate Dispensary, Salford.

Case II. Cecilia M., born 17th May, 1903, was apparently fairly healthy for the first fifteen months. She was breast fed for twelve months, and afterwards for three months had milk, potatoes, broth, etc. At eighteen months of age she had a bad attack of summer diarrhœa, during which she became very collapsed, and her mother tells me that she was not expected to recover. The motions passed at this time were very dark for several days, though she does not remember them to be entirely black. After about six weeks the child slowly improved, but remained weak and pale, suffering from looseness of the bowels for at least twelve months. After this the child suffered a relapse, and became so much weaker that she was entirely unable to walk. She had previously, for a long time, been complaining of pains in the legs, and was noticed to limp. She ceased to grow in height or weight. The hair became very scanty, the stomach very distended, and the motions copious, loose, pale-yellow or clay-coloured, and very offensive.

She first came under my treatment in October, 1907, and when the disease had lasted about three and a half years. I found her very anæmic and ill-nourished. Her weight when stripped was 30 lbs. instead of the normal 37 lbs. Her stomach was very distended and the spleen enlarged. There was no marked beading of the ribs, and no enlargement of the epiphyses, but there was marked curvature of the right tibia, and copious perspiration over the forehead at night. She was put on 15 mm. of liquor hydrargyri perchloridi and anti-rachitic diet, and a very slight improvement was noticed in the colour and consistence of the fæces. Dr. Dixon Mann examined the fæces and found 18 per cent. of fats.

By the end of three months this treatment was held to have failed to markedly influence the disease, so on February 9th pancreatic treatment was begun. After eight days the motions were reported yellow in colour, firm in consistence, less in bulk and frequency. March 26th there was reported a slight falling off in the first improvement, and the child seemed more tired. The motions were, however, firmer and pigmented, and the weight rose to $32\frac{1}{4}$ lbs. March 12th motions continue firmer, about two a day. The child was hot and perspiring at night and still very anæmic. Fehling's test gave a slight reaction after prolonged boiling. On March 30th motions still continued better though the anæmia and weakness remained. The child was then taken to Hospital for closer observation.

A younger brother, Charles M., aged 2 years, presents an intermediate stage between this aggravated form and ordinary rickets with enteritis. He was quite healthy till he was one year and nine months old. He then began with bowel trouble, swollen abdomen, copious frothy foul-smelling motions two or three times a day. There is some enlargement of the bones of the skull, some rickety deformity of chest, but no marked beading of ribs or night cries; but there is anæmia. The motions have improved under perchloride of mercury. Body weight 27 lbs., *i.e.*, about normal. I am not, however, satisfied that the mother was sufficiently careful about giving the non-rachitic diet which I ordered.

There is one other noticeable fact, that both these children have an intense craving to eat anything gritty, especially sand or brick dust, and will quite greedily scrape for anything gritty to eat, however dirty it is. Their mother comes from Brazil, where I believe earth-eating is common.

The third case is not quite so typical but, I think, belongs to the same category.

Case III. J. B., aged four years, has a sister six years of age suffering from spinal caries. Mother and father quite healthy. No sign of syphilis; but early feeding of child somewhat doubtful. Abdominal symptoms developed rather suddenly with distended abdomen, constipation, and progressive muscular weakness. Motions very pale; no jaundice, urine normal.

Dr. Dixon Mann examined the pigment in the fæces and reported the presence of changes similar in character to those in the other case, but less marked in degree constituting an intermediate stage between the first case and normal health.

Pancreatin was at once administered and coincidently the child soon improved. As the case, however, had only lasted one month before I saw it and I had not tried alternative treatment first I do not regard it as so evidently a pancreatic and intestinal one as the others.

A reference, rather hasty and incomplete I am afraid, to the literature of this subject, reveals one or two other similar cases in children. Thus Byron Bramwell, in *Clinical Studies*, 1903 and 1904, reports a case of what he calls "pancreatic infantilism" which was equally amenable to pancreatic treatment. He describes a lad of nineteen years of age who stopped growing at eleven. There was no mental defect. The epiphyses of the long bones were found by skiagraphy not to have united to the shafts. There was no evidence of syphilis, of rickets, or of tubercle. Indeed nothing abnormal except a somewhat swollen abdomen and chronic diarrhœa with six and seven motions a day. The motions contained a large amount of undigested fat. There was no sugar in the urine.

Prof. Sahlis' test capsules of iodoform enclosed in a glutoid capsule which was insoluble in gastric intestinal secretion but

soluble in pancreatic secretion were given, and the envelopes were found not to be digested in the bowel, for no iodine or iodides, were found in the urine and salive, and the capsules were ultimately recovered unaltered in the fæces. When pancreatic extract was administered these capsules were digested and iodides found both in saliva and urine. Further the diarrhœa lessened and after six weeks treatment the lad was found to have increased half a stone in weight, though he had only grown half an inch in height. Treatment was continued from December 27th, 1901, to August, 1902, by which time he had gained $8\frac{1}{2}$ lbs. in weight to $5\frac{7}{8}$ inches in height. Whenever he omitted the pancreatic treatment the diarrhœa returned.

The ultimate history of the case is not recorded.

In the *British Medical Journal*, 1905, Dr. J. L. Rentoul, of Dublin, reported a case similar to that of Dr. Bramwell. The patient was a girl of eighteen years of age. She had ceased to grow for seven years, and during all that time she had suffered from diarrhœa. The motions floated in water, were oily in character, and very large in bulk. She had suffered from diarrhœa from infancy; was sleepy and heavy, though never dull in intellect, easily tired and disinclined to walk much. The appetite was very good; the abdomen was enlarged. She grew slowly till eleven years of age and then stopped till she was eighteen years of age. At that time she was bright in appearance and intellect but looked only nine years of age. The only abnormality was an enlarged abdomen, due to flatulent distension. The skin was healthy, heart and lungs normal; no sexual development; urine normal; height 2 feet $2\frac{1}{4}$ inches; weight 4 stone $\frac{1}{2}$ lb. No evidence of rickets.

Treatment. She was given some pancreatic extract three times a day between meals. In two weeks there was a great improvement; diarrhœa had ceased, the stools were healthy and more natural; the abdomen less swollen. At the end of one month's treatment she had gained $\frac{3}{4}$ inch in height and $2\frac{1}{2}$ lbs. in weight. All medicine was stopped for one week and she relapsed to previous condition. Treatment then was recommenced and from 16th May to 4th October, 1904, she gained $9\frac{1}{2}$ lbs. in weight and two inches in height. The

improvement in general health also corresponded. She was bright, happy, and willing for work. Breasts began to develope and hair grew on pubes and in axillæ. In January, 1906, she was still under treatment, and reported doing well, and working every day at a mill; had grown fat and taller. She was still taking pancreatic extract.

There were a number of cases reported in the *Lancet*, May 30th, 1903, under the term "Acholia," by Dr. Cheadle, of which one seems to be nearly allied to the first and second of my cases. A child began at fifteen months of age with wasting, vomiting, and the passing of offensive sour, white motions, full of undigested curd. The motions were analysed and when dry consisted of an oily cake, 65 per cent. of which was soluble in ether and consisted of neutral fat. Improvement ultimately took place under perchloride of iron, mercury and arsenic, combined with pancreatin in food.

There are some very suggestive remarks in Von Noorden's work on Metabolism, vol. ii., recently translated by Dr. Walker Hall, as to the effects of the stoppage of pancreatic secretion, and a comparison with the effects of stoppage of biliary secretion.

When the pancreatic duct is alone obstructed the fatty stool differs from that of biliary obstruction in the following respects:

i. It still contains bile pigment.

ii. Fatty acids and soaps do not constitute so large a percentage of the fats present. A large part of the latter is still neutral fat. . . . In marked cases the presence of neutral fat may be recognised in the fæces with the naked eye, for when newly evacuated a fine film of fluid fat forms a covering which rapidly congeals on exposure.

iii. Remnants of muscle fibre are present.

iv. There is a greater liability to putrefaction.

I should, in conclusion, like to accentuate the relationship which subsists between these cases of non-metabolism of fat and other well-recognised conditions. When first seen, in general appearance these cases often suggest abdominal tuberculosis, though their long continuance contra-indicates this view. They also suggest rickets, which we know to be due either to a defective supply of fat in the infant's food, or to a defect in

the digestion of fat caused by intestinal catarrh and excess of fermenting carbohydrates. The swollen stomach, the sweating, the malnutrition of the bones and of the hair, the defective growth, are all in agreement with such a view. I have not, however, yet found the marked bone deformity nor the usual rickety signs in the cranium. The fact that some of the cases result in more or less permanent infantilism shows that another element than true rickets is present. The onset in several of the cases with constipation and black tarry motions and collapse indicates that there is some bleeding somewhere, though whether duodenal or not, I can not say. The presence of traces of glycosuria suggests that the pancreatic duct may be blocked temporarily in some cases. I do not think, however, that a diagnosis of interstitial pancreatitis is sufficiently exhaustive. There may be a pancreatic lesion in some cases, but it is well at the present to note the defective metabolism of fat, and concerning oneself rather with the interference of metabolism in general, without exclusive reference to the condition of the pancreas to treat the conditions of general catarrh of the bowels, as well as to provide a pancreatic digestion of fats in the food.

CHRONICLE.

Medicine.

Differentiation of different Types of Hæmolytic Jaundice by means of washed erythrocytes.

WIDAL (F.), ABRAMI (P.), and BRULÉ (M.). *La Presse Méd.*, October 9, 1907.

THE authors show, by a series of observations, that to measure the resisting power of the red blood cells as determined by their resistance to hæmolysis when submitted to solutions of common salt of varying strengths, it is necessary first to remove the plasma. When this is done, the fragility of the red blood corpuscles can be easily demonstrated in cases of congenital jaundice, in splenomegalic jaundice of Hayem and in pernicious anæmia with jaundice. The authors deduce from this that cases of hæmolytic jaundice can be differentiated from cases of hepatic jaundice (due to calculi, catarrh of bile ducts, etc.), by the fact that in the former fragility of the red cells can be demonstrated, whereas in the latter their resisting power is normal.

E. N. CUNLIFFE.

The Physiology and Pathology of Infant Feeding.

PFAUNDLER (M.) and others. *Muench. med. Woch.*, 1907, No. 44.

THIS is an attempt to attack the problems of nutrition along the lines of Ehrlich's theory of immunity, by establishing an analogy between the process of assimilation or cellular digestion and such phenomena as hæmolysis and bacteriolysis. The results of experimental work directed to this end are summarised, but the argument can be only very imperfectly reproduced in a short abstract.

Infant Feeding and the Side-chain Theory.

Tropholysis or the mechanism by which the nutritive substances are assimilated to the protoplasmic molecule is presumably analogous to that of hæmolysis and bacteriolysis. We may thus conceive of a tropholytic receptor and a tropholytic complement. Pfaundler, like Escherich, has come to the conclusion that mother's milk contains certain important substances having the character of ferments, whose influence is chiefly upon the ultimate or cellular digestion, and obtains only within the same species. The question then arises, whether

the superiority of mother's milk is owing to the presence of tropholytically active bodies promoting tropholysis in the organism of the child. If so, these are probably of the nature of complements.

The presence of hæmolytic and bacteriolytic complements was taken as indication of the presence of tropholytic complement, and certain questions were submitted to experiment :—

(1) Does milk contain complements ?
(2) Can such complements be absorbed from the alimentary canal in an active state ?
(3) How does the amount of complement in the infant behave as regards race, individual, age, feeding, etc.

The first was answered for the most part in the affirmative, Moro demonstrating both hæmolytic and bacteriolytic complements in various milks. As to the second, the chain of evidence is not yet complete, but points strongly to the probability of such an occurrence. The third question is dealt with in the next section.

The Behaviour of the Serum Complement in the Infant.

Quantitative estimations of complement were made in 83 infants and in new-born animals. The serum of new-born infants lacks any hæmolytic power owing to the absence of free intermediate bodies (receptors). The significance of this fact appears in the great danger of general spread in trivial local infections in the new-born. Complement, on the contrary, is present both in the fœtus and in the new-born in quantity little inferior to that in the adult. In the normal breast-fed infant, after a slight initial fall, the curve rises till on the fourth or fifth day it has reached practically the adult figure. In the hand-fed it may behave in the same way or may fall gradually during the first week. The difference is very striking in weakly children, disturbances of health, which in the hand-fed distinctly reduce the complement value, have little effect on it in the breast-fed. In acute nutritional disturbances in hand-fed infants the serum complement is, as a rule, diminished, and in severe chronic disturbances, particularly in advanced atrophy, it is very much reduced.

Potential Amount of Complement in Natural and in Artificial Feeding.

Experiments on dogs and rabbits showed that those fed on the breast were richer in complement, or in other words that in the artificially fed animals the actual and potential complement was reduced.

Infantile Dystrophy.

This supply of tropholytic complement by the mother is occasioned by the fact that the child, after birth, has not acquired the capacity of producing the substance itself. There are some new-born infants and animals which have this capacity and are

thus not dependent upon the mother, but there are others to whom it is essential and who if fed on other than mother's milk suffer from nutritional disturbance. The dystrophy so resulting has been termed hetero-dystrophy. "Hetero-dystrophy," according to this hypothesis, depends essentially upon reduction in the amount of tropholytic complement.

The writer goes on to show how the various symptoms and accompaniments of dystrophy are similar to the results of deficiency of complement as described by Ehrlich. There is thus a strong analogy to the infections, and the contention is, that the symptoms of alimentary intoxication as well as the more general metabolic disturbance are consequent upon a primary failure of assimilation dependent upon a defect of bodies essential to tropholytic changes.

The practical outcome of these observations is the recognition that the difference between material and artificial feeding, is not merely a question of digestibility or of the relative proportion of various food principles, but the presence of substances with an important influence upon assimilation which are absent from alien milk. G. R. Mill.

Writers' Cramp.

Vaschide (M. N.). *Gazette des Hôpitaux*, August 31, and September 7, 1907.

The author points out that there are two elements concerned in the act of writing: namely, the habit of systematic co-ordination set up by constant repetition, and the psychical element, or attitude of mental attention devoted to its control. In this respect, he contrasts it with certain other acts, in which the movements are so simple that but little attention is required for their supervision, and which are seldom subject to the development of "cramp." It is the prominence of the psychical element which, in the author's opinion, renders the act of writing peculiarly prone to the occurrence of spasmodic disorder; and in one of three cases recorded in his paper, it was noticeable that, while the act of copying could be performed without difficulty, any attempt at spontaneous writing was productive of spasm. The increase in the disorder brought about by observation is another proof of the large part played by psychical influences. The author does not agree with those who make of writer's cramp a disorder of peripheral origin. Whilst deprecating the acceptance of a definite writing centre, he inclines to the view that the defect is a central one, and suggests that an explanation may be found in a study of the psychology of the patients. The paper contains an extensive review of the literature of the subject and of the various opinions expressed as to its pathology. In addition there is a full account, with

illustrations, of the numerous pens and mechanical devices that have been invented for its treatment. The three cases recorded were all greatly benefited by hypnotism. Complete recovery, without relapse, resulted in one; in the second, the patient was able to resume his occupation, though he remained fearful of relapse and could not write as quickly as before; and the third showed considerable improvement.

JAS. W. RUSSELL.

The Recognition of the Tetanoid Conditions of Childhood.

ESCHERICH (TH.). *Münch. med. Woch.*, 1907, No. 42.

ESCHERICH again emphasises the importance of the latent symptoms (Trousseau, Chvostek, Erb) for the recognition of tetany in young children. The pathognomonic carpo-pedal spasm is rare in children, and only by the latent symptoms are most cases of laryngo-spasm and certain cases of eclampsia to be interpreted. The condition of mechanical and electrical hyper-excitability, without Trousseau's sign or muscular spasm, he designates as the tetanoid state; muscular and glottic spasm and general convulsions constitute tetany.

Among 328 infants under six months examined at the Vienna Children's Shelter, the tetanoid state was recognised in from 2 per cent. in the first month to 56·2 in the sixth. Artificially fed and rachitic children were chiefly represented. There was noted also as an interesting clinical fact the frequency of nervous disturbances and defects in children who had previously suffered from tetany, and also the occurrence of a chronic tetanoid affection prolonged over some years.

As regard the pathogenesis, Escherich here champions the theory of parathyroid insufficiency. Hitherto the opposition to this hypothesis has based itself mainly upon the absence or meagreness of pathological evidence for the occurrence of lesions of the parathyroids in children. Recently, however, support has been obtained from Yanase's work in Escherich's clinic. Out of 89 unselected cases hæmorrhages were found in the parathyroids in 38 cases. These, as in Erdheim's case (1903), were referred to birth trauma. In all positive cases there existed electric hyper-excitability and convulsive symptoms and a direct ratio between the severity of such symptoms and the degree of anatomical disturbance.

Anatomical changes, however, must not be regarded as essential for the assumption of parathyroid insufficiency; these may be functional disturbances without histological evidence, owing to congenital hypoplasia, retarded functional evolution, or individual variation, as in the case of other glands, *e.g.*, the pancreas. This would explain the frequency of slight cases confined to the early months. As regards exciting causes, in

children specially predisposed slight causes may suffice—improper feeding, unfavourable surroundings; and there is a striking coincidence with the symptoms of commencing rickets.

The therapeutic application of this theory has not yet yielded results. Vassali and Generali report favourable results from their parathyreoidin, but the writer has failed to confirm them.

G. R. Mill.

A Contribution to the Etiology of Perityphlitis.

Naab (J. P.). *Münch. med. Woch.*, 1907, No. 42.

While practising in Asiatic Turkey the writer was impressed by the extreme rarity of perityphlitis in the native population. Of 6,800 patients treated only 2 suffered from this disease, or 0·03 per cent.

Statistics for purposes of comparison are only available for cases coming to operation, and the relative frequency of perityphlitis amongst all cases operated upon shows as follows:—

Inner Asiatic Turkey	0·1%
Constantinople (Turkish Hospital)	0·3%
,, (German ,,)	3·3%
Germany—Hamburg and Berlin	8·5%

Amongst the Turks perityphlitis is thus almost an unknown disease, and was ten times more rare than amongst Europeans in the same town. The explanation was not to be found in anatomical or climatic conditions, nor in any natural immunity to any exciting case of appendicitis. It was therefore to be sought in the diet. Further, if foreign bodies such as seeds and fruit stones had any causal relationship, the disease ought to have been more frequent amongst the natives, who eat much fruit. Constipation likewise was common. He was driven to the conclusion that the greater frequency in Europeans is due to the large proportion of meat in the diet, which probably operates, in part at least, by conducing to sluggish action of the colon and fæcal stagnation with its results. This would account for the rarity of appendicitis in the early years of life and for its increase during the past ten years. The diminished frequency after the age of 30 is to be attributed to retrogressive changes in the appendix. The writer believes he has proved that the most important predisposing cause of perityphlitis is an excessive consumption of meat. His only two cases were from the most well-to-do families of the town, and this he thinks was something more than accident.

G. R. Mill.

Loss of Comprehension of Proper Names.

Fry (F. R.). *Journ. Nerv. and Mental Disease,* 1907. Vol. xxxv., p. 617.

In the interesting case recorded here the patient, after an accident to his head, lost completely for a period of about three weeks the power of comprehending or recalling for speech proper names. There was not any other trace of aphasia, he spoke fluently and intelligently, but deliberately avoided the necessity of employing proper names in his conversation, and he could not recall the association of proper names when they were uttered to him. He could, however, repeat names without difficulty and write them to dictation accurately and without hesitation, though he failed to comprehend them even while doing so. These symptoms disappeared almost entirely after a few weeks. They were regarded by the author as evidence of a very slight and incomplete sensory aphasia, in which, as is often the case, the chief symptom was inability to recall the names of things seen and to picture to the mind the appearance of things named.

Gordon Holmes.

Glycogenesis without Glycogen.

Lépine (R.). *Rev. de Méd.,* Paris, 1908. P. 176.

The author argues that a second source of glucose exists in the body, in addition to the well-known glycogen. This second source he names "virtual sugar," and the blood from the carotid artery may give as much as 0·20 gramme per litre more glucose than does blood from the right ventricle—hence glycogen cannot be the source of this glucose. He believes that some ferment in the lungs sets free this glucose from some combination with protein; and that a number of different protein-glucose compounds circulate in the blood-stream, compounds that break up into glucose and protein with different degrees of readiness. Possibly the leucocytes play an important part in this liberation of glucose, as when the blood is drawn and allowed to clot, the serum lying just above the buffy coat of the clot is richer in glucose than the upper layers of serum are. Addition of emulsin or invertin to the freshly drawn blood increases the quantity of glucose produced; heating with acid in a sealed tube produces even more glucose.

A. J. Jex-Blake.

The Substitution, Transformation, and Association of Diseases in the Neuropathies.

D'Abundo (G.). (*Riv. ital. di Neuropat., Psich., ed Elettroterap., Catania,* 1907, 1, p. 1.)

The author details a number of cases in which one form of nervous disorder was suddenly replaced by another, epilepsy

being concerned in 8 of them. (1) A man had frequent epileptic fits from the age of 16 to 46, when he was very severely frightened; the fits ceased, paralysis agitans appeared on the right side, and was still present 10 years later. (2) A man of 28 had a head-injury at 4, and had frequent epileptic fits afterwards until he was 15; he then was very severely frightened, and developed a fine rapid tremor of the hands and feet, increased by movement or emotion; but had no more fits. (3) A woman of 35 suffered from monthly hemicrania from 12 to 25, when the hemicrania was replaced by asthmatic attacks every 6—15 days. (4) A man of 50 had had violent hemicranial attacks every 2–3 weeks from his youth; after about 25 years he had a severe infectious fever, and the hemicrania was replaced by paralysis agitans. (5) A man had epileptic fits every 8—15 days, from the age of 18; at 30 he had syphilis, which was treated by 50 mercurial injections and a quantity of iodide; at 38 general paralysis appeared, and the fits ceased for 3 years—when the patient died. (6) A man had epileptic fits every 2–3 months from 20 till he was 35, when the fits ceased and general paralysis appeared; the patient had had syphilis at 23, carefully treated for 2 years, and died at 39. (7) A woman had frequent attacks of migraine (mainly on the left side) for 18 years; at 45 she woke up one morning with a marked left hemiplegia, and 5 years later had had no further migraine. (8) A man suffered from migraine every 2 weeks from 14 to 23; at 23 a prolonged illness led to the symptoms of neurasthenia, which lasted 18 months, during which time the migraine ceased; 2 months after the cure of the neurasthenia, the attacks of migraine returned. (9) A woman had asthma from 21 to 32, the attacks being less frequent during three normal pregnancies in that period. At 32 she had a difficult labour, with hæmorrhage, and for 15 months was neurasthenic but free from asthmatic attacks; 2 months after she was cured of the neurasthenia, the asthma returned. (10) A man suffered from writer's cramp from 57 to 67, when he had Malta fever for 3 months; after this he developed right-sided paralysis agitans, but the cramp disappeared. (11) A woman of 33 had had epileptic fits every few weeks from the age of 14; she married, and during each of 3 pregnancies the fits ceased, but were replaced by insanity characterized by delirium, hallucinations, and jealous obsessions; which ceased post partum on each occasion, when the epileptic fits recurred. (12) A woman of 27 had had epileptic fits every 10 or 12 days from the age of 15; at 23 she was given bromide (15 grains 3 times a day) and the fits ceased, but the patient became neurasthenic and suffered from fixed ideas. The bromide was stopped, and the fixed ideas passed away, but the fits returned. The bromide was twice tried again, and had to be stopped twice, each time with the same effects and for the same reason. (13) A man of 32 began at 19 to have frequent

violent shooting pains in his left sciatic nerve area, with pallor of the face, followed by hours of depression. At 23 he was diagnosed and treated as an epileptic, with large doses of bromide, successfully. At 25 he had his first epileptic fit; after this the sciatic pains ceased, but the fits recurred and were preceded by a motor aura in the left leg and hand.

The author also gives three more cases, of associated nervous disorders; and discusses the possible explanations of these substitutions or transformations of diseases in neuropathic subjects.

A. J. Jex-Blake.

Mongolism.

De Sanctis (S.). *Riv. di Patol. nerv. e ment.*, Florence, 1907, 12, p. 481.

The Mongolian type of idiot or imbecile, first defined by J. L. Down 40 years ago, has only within the last 10 years or so been recognised in France and Germany. Professor de Sanctis has seen about 20 in all; he describes them as short, small headed, brachycephalic, often with the neck thick, oblique or "Chinese" eyes, the nose short and small but broad at the root, the forehead wrinkled, the lower jaw large and often prominent, the ear often shewing abnormal shape or deficient development, the "Aztec" ear of Wildermuth; converging squint or some congenital defect in the eyes is common, the hair is dry and there is a tendency to alopecia, the nails are dystrophic, the fingers are often short and unsymmetrical, and the little finger and thumb are relatively shorter than the other fingers. The mongolian tongue has been described as geographical, cerebriform, or scrotal, being irregularly fissured and often enlarged, but it is not diagnostic. The thorax and abdomen shew no constant change—though Kassowitz observed umbilical hernia in 44 out of 53 mongolian idiots. Physically they are weakly, prone to tuberculosis, and to defective circulation, often with subnormal temperature; in more than half his cases the author observed weakness of control over the sphincters: their development is delayed and ultimately defective, growth ceasing at 14 or 15. Mentally they may shew all degrees of various types of inferior development, and are generally cheerful, imitative, infantile, often with a tendency to explosive or unchecked laughter; but mixed and vicious types of mentality are not rare. Mongolian idiots may be differentiated from cretins by shewing a normal thyroid, no subcutaneous puffiness, a more lively nature, and by being organically more delicate—most mongolian idiots die between 13 and 20: rickets, achondroplasia, and myxœdema must also be differentiated. Post mortem, nothing more definite than a general hypoplasia, well marked in the brain, can be found; the brain is small, with ill-developed, ill-marked

convolutions, and poor in multipolar cortical cells. Practically nothing is known as to its etiology or the pathogenesis of Mongolism; 7 of the 20 patients were the youngest members of their families; the author also lays stress on the fact that some degree of myxœdema is very often associated with Mongolism, the myxœdematous signs passing off. And Mongolism may be acquired in childhood, not congenital, following a severe illness such as enteric fever; there is no proof that it is due to disease (syphilis, tubercle, etc.) inherited from the parents. As regards treatment, the Mongolian idiot will profit much by thyroid extract in infancy, little in childhood; a careful system of education should be pursued, and as Fennell remarked, much promise is shewn, but little is realized. Some have the infantile type of mind, and can be taught up to a certain point; but others with the imbecile or epileptoid type of mind are very refractory to educational methods.

A. J. Jex-Blake.

A Case of Sarcoma of the Stomach.

Martini (E.) (*Il Morgagni*, Milan, 1907, 49, pt. 1, p. 770.) The patient, a basket-maker of 46, had enjoyed good health until 6 months before he came under observation, when he began to have a sense of weight and fulness in the epigastrium. Pain and nausea followed, and 4 months before he came into the Hospital he noticed a tumour in the left hypochondrium, which grew rapidly. On admission he was wasted, cachectic, with an earthy-yellow complexion; there was a large pleural effusion on the left side, while the abdomen was much distended and tense, particularly on the left side. A large fixed rounded and knobbly tumour could be felt filling up the left side of the abdomen, and the diagnosis of sarcoma of the spleen or of the omentum was hazarded. The liver was not enlarged; the urine was normal; the gastric juice contained a small amount of HCl and no lactic acid. The patient died of exhaustion $3\frac{1}{2}$ weeks later, his nausea, abdominal pains, vomiting, and hæmatemesis, having resisted all treatment. Post mortem a large rounded tumour weighing 11 lbs. was found, invading the wall of the fundus and greater curvature of the stomach, the diaphragm, the spleen, but not the left kidney, and densely adherent to the abdominal parietes. The pylorus and about half the stomach were free from new growth, and normal: parts of the infiltrated gastric wall were ulcerated down to or below the muscularis mucosæ. Microscopically, the tumour was composed of small round cells, with little intercellular fibrous tissue; these small round cells were often grouped circumferentially round the scanty vessels of the tumour, recalling the appearance of a perithelioma. The nutrition of the tumour-cells was good round the vessels, but poor at a distance from them; in many places

the endothelium of the capillaries was interrupted, so that hæmorrhages and embolism by tumour-cells occurred. Martini discusses the literature of gastric sarcoma and the various forms it may take.

A. J. Jex-Blake.

A Case of Melanosarcoma of the Liver.

Petrone (L.) (*Giorn. internaz. d. Sci. med.*, Naples, 1908, 30, p. 171).

The patient, a woman of 29, died after only 2 months illness with much weakness, wasting, swelling of the liver, ascites, and œdema of the legs; her urine contained much melanin, and her skin was dark brown, but the mucous membranes shewed no brown flecks. The liver reached below the umbilicus, and post mortem was found to be stuffed with innumerable rounded brown nodules up to the size of a large nut. Similar nodules were found in the kidneys, pancreas, lungs, and basal nuclei of the brain. Microscopically, the tumour cells were round or fusiform, most of them containing pigment granules. The liver substance was much broken up by these invading sarcomatous cells, and it also contained excess of fibrous tissue. The small pigmented deposits in the brain seemed to consist of pigment only, without any tumour cells. Four years before her final illness the patient had had her left eye enucleated on account of a tumour in it; Petrone remarks that the period of latency—four years—during which the woman had enjoyed good health, was unaccountably long.

A. J. Jex-Blake.

A Syphilitic Mediastinal Tumour.

Buttino (D.) *Riv. crit. di Clin. med.*, Florence, 1908, 9, p. 1.

The patient, a labourer of 66, had syphilis at 42. Two months before Buttino saw him he began to have a sensation of oppression in the thorax and difficulty in breathing. He was short of breath, exertion brought on dyspnœa and palpitation, and he became liable to suffocative attacks at night with retrosternal pain radiating into the right shoulder and down the right arm. Aphonia and difficulty in swallowing soon followed. A medical man recommended *x*-ray treatment to him, but after 8 applications he was none the better. Buttino found him well nourished, aphonic, and very short of breath. Enlarged movable and hard glands could be felt along his sternomastoids, and the superficial veins of his neck were enlarged. No sign of aneurysm could be found, and the heart-sounds were normal; the breath-sounds were normal except in the right subspinous fossa, where a slight pleuritic rub could be heard. The upper part of

the thorax moved ill on respiration, and there was great enlargement of the superficial veins in this region. The manubrium sterni was dull on percussion, the dulness extending an inch on either side. The *x*-rays shewed a large area of opacity corresponding to this dullness, and spreading up into the neck and under the inner ends of the clavicles so as to mask the normal transparency of the apices of the lungs. This mass was not continuous with the aortic arch, which appeared normal to the *x*-rays. Laryngoscopic examination shewed that the left vocal cord was paralysed and lay in the cadaveric position. The blood-count was quite normal. Potassium iodide was given in large doses, and completely relieved the patient of his symptoms in two months, while the *x*-ray shadow of the mass was much reduced in extent and density.

A. J. Jex-Blake.

Chronic Disease of the Liver in Acquired Syphilis.

Ebstein (W.). *Deutsches Arch. f. klin. Med.*, Leipzig, 1908, 92, p. 236.

In this paper Ebstein discusses three cases of cirrhosis of the liver occurring in adults, in each of which he believes acquired syphilis to have been an important factor in the production of the disease, and three cases of hepatic gumma. (1.) An alcoholic publican of 66 came into Hospital and died with anasarca in a fortnight; at the obduction chronic heart disease, interstitial nephritis, cirrhosis of the liver and spleen, pulmonary tuberculosis, and double fibrous orchitis were found, the last diagnosed as syphilitic by Orth. Ebstein believes that the hepatic cirrhosis in this case was partially due to syphilis, and that the patient would have profited by antispecific treatment at an earlier stage of his illness. (2) An alcoholic brewery man of 46, who had had syphilis at 29, had an increase in the size of his liver 3 years before he died; the liver then lessened and the man died with the symptoms of heart failure and cirrhosis of the liver. In the right mammillary line sunken areas could be felt in the liver, and these seemed post mortem to be syphilitic scars: the kidneys shewed chronic parenchymatous nephritis, which also, Ebstein thinks, was due to syphilis. (3) An apothecary had malaria at 23, syphilis at 25, and at 28 pains in the region of the liver and right shoulder, without jaundice. At 33 he suffered from renewed attacks of malaria, and had jaundice; his legs and abdomen swelled considerably. The ascites was tapped 8 times in 7 weeks, during which time 100 grammes of KI were taken; the patient improved much, and was sent out cured in 4 months. Then he had an attack of gonorrhœa and cystitis, with return of the ascites, abdominal puncture, and again recovery; and seven years later was reported to be well. After the first tapping his liver was felt to be enlarged, tender, and

granular, and Ebstein diagnosed syphilitic cirrhosis hepatis; he points out that this case proves the condition to be capable of cure by appropriate treatment. (4) A military man had syphilis at 24, and at 27 complained of pains in the region of the liver, which was tender and exhibited a fluctuating swelling in the right lobe. The symptoms improved when mercury inunctions and KI were given; 18 months later a depressed scar could be felt at the site of the previous swelling, and was a little tender. At 44 the patient was in good health. (5) A merchant acquired syphilis at 26, and from the ages of 33 to 40 had suffered from pains in and enlargement of the liver and spleen; cirrhosis hepatis was first diagnosed, and then hydatid cyst of the liver, as a fluctuating epigastric tumour appeared in the liver. At 40 he was seen by Ebstein, who found the liver enlarged 2 finger's-breadths below the umbo, and could feel an apparently fluctuating indiarubbery tumour in the epigastrium. KI was given, and followed by mercurial inunctions, and the patient improved greatly. Ebstein remarks that fluctuation is rarely obtained in hepatic gummata. (6) A man of 32, who denied venereal infection, after suffering for 5 months from wasting, severe jaundice, pains in the region of the liver (which was tender but not enlarged), died suddenly with melæna and the symptoms of internal hæmorrhage. A fortnight before his death, Ebstein had palpated a smooth rounded tender swelling the size of a shilling in the left lobe of the liver. An obduction was performed, and it was found that what was in all probability a necrotic gumma had opened into a blood vessel, and that the blood had found its way thence through the bile passages (which were free from calculus) into the intestine, which was healthy.

A. J. Jex-Blake.

The Action of Formaldehyde upon Diabetic Urine.

Michaud (L.). *Deutsches Arch. f. klin. Med.*, Leipzig, 1908, 92, p. 228.

Following up an observation of Lüthje's that the addition of formaldehyde (as a preservative) to diabetic urine caused a diminution in the amount of acetone it contained and made the reaction with $FeCl_3$ disappear, Michaud has studied the reactions that seem to take place. To 250 c.cm. of the urine he added 1·5 c.cm. of 40 per cent. formaldehyde solution; the acetone was measured quantitatively by the method of Messinger and Huppert, the aceto-acetic acid by Embden and Schliep's method. He finds that the formaldehyde destroys the aceto-acetic acid completely and rapidly—within 24 hours, in the cold—without the formation of any acetone; the urinary glucose is unaltered by the formaldehyde, and so are the urinary acetone

and β-oxybutyric acid. The higher aldehydes of the C_nH_{2n+2} series are without this destructive action upon the urinary aceto-acetic action. Michaud is uncertain whether the aceto-acetic acid is broken down by the formaldehyde into acetic acid, or a condensation compound of the formula $CH_3{\cdot}CO{\cdot}C(CH_2){\cdot}COOH$ is formed. He finds that the destruction of aceto-acetic acid by formaldehyde in vitro is a very slow process, and argues that the diabetic urine must contain some substance that acts as a positive catalyser.

A. J. Jex-Blake.

Ring-bodies in the Blood in Anæmia.

Schleip (K.). *Deutsches Arch. f. klin. Med.*, Leipzig, 1907, 91, p. 449.

After referring to the polychromasia and the presence of basophile granules in the red blood corpuscles not infrequently seen in the blood of patients with severe anæmia, and due in all probability to the survival of portions of the nucleus, the author goes on to record his observations on the presence of ring-shaped nuclear residues in such red-cells. In a case of pernicious anæmia with about a million red cells and 2,000 to 3,000 leucocytes per cubic mm. of blood, and 40 per cent. of hæmoglobin, he found 2,000 to 3,000 red cells containing ring-like residues in each cubic mm. of blood. The rings were basophile, structureless, generally 3 or 4 μ in diameter, plain or twisted in outline, and very thin; some were skein-like or of bizarre outline. Examining other blood-slides for similar structures, he found them in 4 cases of pernicious anæmia, 2 of severe secondary anæmia, 1 of acute leuchæmia, 3 of chronic lead-poisoning, and 1 of pseudoleuchæmia. In some cases definite nuclear residues could be found in the red-cells shewing these rings, and Schleip thinks that the rings are possibly the last residues of nuclear membranes left in normoblasts that were passed into the circulating blood before caryolysis was complete. Similar ring-shaped structures were described by Cabot in 1903; Schleip argues that they shew that normoblasts become normal non-nucleated red-corpuscles by caryolysis, and not by extrusion of the nucleus. He gives a coloured plate of their appearance.

A. J. Jex-Blake.

A Case of Polymyositis.

Gottstein (E.). *Deutsches Arch. f. klin. Med.*, Leipzig, 1907, 91, p. 198.

In certain cases, polymyositis is associated with eruptions on the skin or skin and mucous membranes—dermatomyositis or dermatomucosomyositis (Oppenheim, 1903), but its ætiology is

always obscure. In the present instance, the patient, a man-servant of 23, had had 4 attacks diagnosed as articular rheumatism in the 3 previous years, with $1\frac{1}{2}$ years of military service in between. There had been much pain and swelling in the limbs, as well as in the joints, during these attacks. On admission (April, 1906) he was a well nourished man, free from anæmia, œdema, obvious morbus cordis, or lung-disease, but markedly short of breath; he was very tender on pressure over the ankles and parts of the spinal column, and the nervous system seemed normal. After this, fever set in, and most of the patient's muscular system became intensely tender on pressure, and was firmly contracted and hard to the touch (while the overlying skin was unchanged), more on the right side than the left. Rigors, dyspnœa, attacks of vomiting, and bouts of severe spontaneous muscular pains occurred, and the patient's condition became very alarming; a week after admission the heart and lungs shewed little abnormality, the blood count (white and red cells) was normal and there was no eosinophilia, and the blood (20 cbc. cm.) proved sterile. Lumbar puncture gave a negative result. Cheyne-Stokes breathing was observed, and the pupils became dilated and fixed, the fundus appearing normal. The patient was now put into a permanent bath for 3 days and given ʒii sodium salicylate (previously withheld) a day, and improved much. Pericarditis with effusion appeared, but cleared up entirely in a few weeks. Pneumonia of the lower right lobe accurred, followed by pneumonia of the left lower lobe next day, but no rusty sputum was seen; this cleared up slowly, and was followed by a moderate pleural effusion on each side, which was tapped. Turbid fluid with many polymorphonuclear leucocytes was withdrawn, and found to be sterile and free from tubercle bacilli. The circulating blood was twice more examined bacteriologically (20 cbc. cm.), but found to be sterile. Electrical examination shewed that the galvanic excitability of some of the muscles was lowered, but no reaction of degeneration was obtained. After a slight relapse (muscular pains and tenderness) the patient slowly made a complete recovery. A piece of the right biceps was excised and examined for trichinæ, but with negative result. It was observed, however, to be œdematous, and many of the muscle fibres were acutely degenerated into detritus devoid of nuclei; the connective tissue was unchanged, and no hæmorrhage or infiltration with small round cells was to be seen, nor could fibrin or bacteria be found by use of the appropriate staining reagents. Two months later pieces of the left biceps and right vastus externus were excised and found to shew similar changes, but to a far smaller degree and extent. Redness and swelling of the vocal cords, with hoarseness of the voice, had been noted at the outset; this condition was the last to improve, and was not completely cured at the end, when the patient was sent out, in July. In August

he returned, complaining of articular pains and swelling, the muscles being free from pain and tenderness, and he slowly recovered when treated with salicylates and hot-air baths. His heart was enlarged to the left, and an apical systolic murmur with accentuation of the pulmonary second sound could be heard.

Gottstein concludes that this was a rather exceptional case of polymyositis, probably a relapse from a previous attack occurring 3 years before. The skin and mucous membranes of the mouth and pharynx were not affected, as they were in Oppenheim's cases; perhaps the laryngitis took the place of this part of the dermatomucosomyositis of that author. Gottstein believes the pneumonia to have been an aspiration pneumonia, consequent on the frequent vomiting. The pericarditis and pleurisy, both acutely inflammatory, may have been rheumatic. The cardiac weakness observed in the acute stage was no doubt due to acute myocarditis, which has often been seen in cases of hæmorrhagic polymyositis. The spleen, kidneys, and nervous system, were but little affected in this case; Gottstein draws attention to the close connection shewn in this case between polymyositis and acute articular rheumatism, and remarks that the patient obtained great benefit from the permanent bath, but little from the salicylate.

A. J. Jex-Blake.

Verrucae Plantares in Boys and Young Men.

Bowen (J. T.). *Boston Med. and Surg. Journ.*, December 12th, 1907.

Attention was first called to these plantar warts by Dubreuilh who described their peculiar characters in 1895. The writer has met with a large number of cases almost all in young people and particularly in preparatory schools and colleges. He has seen 34 cases in private practice, of which 28 were males. Youths and boys under twenty are those most frequently affected. He has not found evidence of local traumatism which Dubreuilh believed to play an important part. The warts may be few or many; in one case there were thirty. There is some evidence to suggest that they are contagious.

The writer's histological findings in twenty cases examined agree for the most part with Dubreuilh's description. Owing to pressure the warts do not project to any extent but burrow into the cutis, while the adjacent epidermis becomes hypertrophied.

Treatment. In many cases salicylic collodion (10 per cent.) is sufficient.. This is painted on daily and the foot soaked every other day for twenty minutes in hot water, after which pumice-stone is used to remove as much of the lesion as possible and the paintings renewed.

Many cases, however, do not respond to this; in these some success has been had by the addition of chysarobin (10 per cent.), or by covering the lesions with 60 per cent. salicylated gutta-percha plaster. Electrolysis is effective but very painful without thorough local anæsthesia. Excision is practised by some but must be thoroughly done. The Paquelin cautery is also advocated as being sure and rapid.

G. R. Mill.

Diphtheritic Fever.

Moore (John W.). *Dublin Journ. of Med. Sci.*, January, 1908. Sir John Moore records in this article an outbreak of sore throat occurring in a girls' boarding school in Dublin, which was bacteriologically shown to be due to "a form of the Klebs-Loeffler *bacillus diphtheriæ*," but which failed to present the classical clinical features of diphtheria. The whole of the school buildings had been recently put into a sound and sanitary condition. The 43 girls remained in good health for 5 weeks after they returned to the school from their summer holidays. Then the first case occurred, eight days later a second, nine days after this two more, and in the following week ten others. The symptoms were cold in the head, temperature as a rule reaching 101, enlarged inflamed tonsils, furred tongue, cervical adenitis, patchy rash on the roof of the mouth, and in some cases a roseolar eruption on the chest. Only a few cases had false membrane on the throat, and only one had albuminuria. In three cases there was peeling of the hands three weeks later. Two months after the epidemic the girls went home for the Christmas holidays, and in two instances girls carried diphtheria home to the country. A year later a similar though smaller epidemic occurred. Soon after the first outbreak the writer had as a patient a lady suffering from a similar febrile attack, which was followed by extensive peripheral neuritis. In this case, unfortunately, a swab was not taken. We think the name suggested for this affection is, at any rate, in the present state of our knowledge not a happy one, and if the true Klebs-Loeffler bacillus is proved to be responsible for such a condition, we should prefer "diphtherial" to "diphtheritic."

Frank E. Tylecote.

Surgery.

Nerve Dissociation: a New Method for the Surgical Relief of certain Painful or Paralytic Affections of Nerve Trunks.

Babcock (W. W.). *Annals of Surgery*, 1907. Vol. xlvi., p. 686.

This is a preliminary report of results obtained in treating certain forms of paralysis or paræsthesia due to inflammation or injury of nerve trunks, by isolating the affected part of the nerve through an incision, freely opening the nerve sheath, dissociating the component fibres, and isolating the nerve from later fibrous tissue compression.

The objects of the neurolysis are to permit the escape of exudate from within the nerve sheath; to reduce pressure upon individual nerve fibres; to free axis cylinders which have become useless through entanglement in scar tissue; to facilitate the formation of new or restoration of old nerve paths; and to stimulate desirable trophic changes in the nerve trunk.

So far the writers have operated only in 4 cases but these results are certainly encouraging. The technique of the operation is described, and careful accounts are given of the 4 cases operated upon, from which the following tentative conclusions are drawn:—(1) That the surgical dissociation of nerve fibres may be carried out without producing gross evidence of reduction in the conducting power of the nerve. (2) Dissociation probably is not as apt to produce paralysis as thorough nerve stretching. (3) In certain cases of neuritis, nerve dissociation is less dangerous and more potent in relieving symptoms than nerve stretching. (4) In certain cases of motor paralysis following inflammation or injury of nerve trunks, dissociation may be followed by a remarkable and almost immediate return of some function. (5) In the treatment of certain forms of peripheral paralysis due to interruptions of nerve paths by masses of fibrous or other tissue, the operation of nerve dissociation from its apparent safety and conservatism is deserving of trial, *e.g.*, in cases of brachial birth palsy, etc.

P. R. Cooper.

Tonsillar Hæmorrhage.

Jackson (C.). *Annals of Surgery*, 1907. Vol. xlvi., p. 821

This writer considers tonsillotomy an unjustifiable operation, and as more likely to be followed by troublesome hæmorrhage than tonsillectomy. He objects to the use of ice and other hæmostatics locally as unsurgical and liable to be followed by

secondary hæmorrhage. Hæmostasis by torsion with hæmostatic forceps promptly done while the bleeding vessels are plainly seen not only stops hæmorrhage but forestalls secondary bleeding.

Oozing after tonsillectomy is rare; bleeding from a vessel concealed behind the anterior pillar is, however, frequently mistaken for oozing; the treatment is to draw the anterior pillar forwards with a blunt hook and seize and twist the vessel with long hæmostatic forceps. A gauze sponge pushed into the cavity left by the removal of the tonsil (if a sponge the size of a walnut cannot be inserted the whole of the tonsil has not been removed), will stop slight bleeding. Any hæmorrhage not controlled by torsion can be stopped by ligature of the external carotid artery.

P. R. Cooper.

Rectal Anæsthesia: Experimental Studies together with a Report of its Practical Employment at Roosevelt Hospital.

Leggett (N. B.). *Annals of Surgery*, 1907. Vol. xlvi., p. 589.

Etherisation by rectum has been tried at odd times during the last 60 years. The method originally employed was that of boiling the ether in a vessel and allowing the expanding vapour to force itself into the rectum. In this way the vapour entered the rectum in such volume that there was a condensation in the tubes. Liquid ether was consequently forced into the gut, causing extreme irritation, ulceration and hæmorrhagic proctitis. Recently, J. H. Cunningham, of Boston, has introduced an improved technique whereby condensation of the vapour is avoided and absorption occurs with such rapidity that no fluid ether is forced into the gut. This is done by keeping the ether heated, yet constantly below 37°C., which is the boiling point, and forcing the fumes into the bowel by means of a rubber hand bulb. A simple apparatus has been devised to accomplish these objects. The mode of application is as follows: the patient reclines in the dorsal position with the legs slightly flexed. The rectum having been previously cleared, the rectal tube is inserted 8 to 12 inches. Ether fumes are then slowly forced into the bowel. They cause a sensation of fulness so that the patient may have a desire to defæcate. This is overcome by opening the exhaust tube and allowing the gases which are in the rectum to escape. This should be repeated as often as necessary. The patient may have for a time a slight discomfort, then becomes gradually drowsy, and the odour of the ether appears in the breath. He falls asleep, and in a short time has passed into full narcosis.

Notes are given of 13 cases in which this method was employed by the writer, and reference is made to 18 other cases. These cases shew the following advantages of rectal anæsthesia:

lessening of nausea, lessening of bronchial secretion and of irritation to the lungs, lessening of chance of infection from an ether case; on the other hand, a fully and continuously clear field of action is secured in all operations about the head and neck, saving time and loss of blood. P. R. COOPER.

The Roentgen Ray Diagnosis of Urinary Calculi.

CALDWELL (E. W.). *Boston Med. and Surg. Journ.*, January, 1908.

CALDWELL emphasises the importance of competent examination and of skilled interpretation of plates. Most *x*-ray specialists report that calculi are shown in only about one out of every 4 or 5 cases referred to them for examination of the urinary tract, so that in four-fifths of the cases the expert must take upon himself the responsibility of a negative opinion. The essentials of a plate good enough to be safely used for the negative diagnosis of calculus, as usually given, are that it shall show the twelfth rib to its tip, the transverse processes of the lumbar vertebræ and the border of the psoas. A plate, however, showing all these details may fail to show a small calculus of pure uric acid. The psoas shadow is probably of very small consequence. The kidney shadows show best in subjects with a good deal of perirenal fat.

In old subjects the soft tissues are less penetrable and plates are not so easy to make and show less detail than in young and thin subjects. It may be impossible in an old subject, especially with arteriosclerosis or enteroptosis, to demonstrate a good sized calculus of pure uric acid or sodium urate, though these almost invariably contain some oxalate or phosphate which makes them demonstrable.

The intestinal tract should be cleared out with castor oil. Occasionally it may be necessary to pass a styletted ureteral catheter to determine whether certain shadows are of bodies within or without the ureter. When a small calculus is shown in the ureter the size and shape of its shadow will sometimes enable one to predict that it will be passed, and that operation will not be required. Occasionally, conditions other than lithiasis may be indicated, such as tuberculosis, abscess, diseases altering the size, outline or position of the kidney, or a fibrous thickening of the lower part of the ureter. As regards stereoscopic pictures, they have proved to be of little assistance unless the course of the ureter is outlined by the ureteral catheter.

G. R. MILL.

Injuries of the Duodenum from Blunt Violence.

STEINTHAL. *Muench. med. Woch.*, 1908. No. 4.

THE duodenum owing to its position is fairly well protected and figures only to a small extent among subcutaneous injuries of

the gastro-intestinal canal. Thus Petry and Tawastjerna, out of 219 and 170 cases respectively, could cite each only 9 cases of duodenal injury. Of 136 ruptures of the intestine cited by Hertle only 15 were in the duodenum. The subject has been worked up by Meerwein who collected 64 cases of duodenal injury from blunt violence; 28 of these were operated on and only 2 saved.

The writer reports a successful case:—A carter, aged 18, was thrown from his waggon when drunk, two wheels passing over the upper abdomen from left to right. On admission a few hours later he was pale and complained of constant abdominal pains; pulse feeble but regular, 80 to 90 per minute. There was slight general rigidity and tenderness especially just above the navel in the middle line where a small skin abrasion was present. Liver dulness was present but rather high. No intestinal sounds were heard. The legs were slightly drawn up. Rectal temperature normal. Pain, epigastric tenderness and abdominal rigidity increased, with repeated vomiting, not bilious, and enfeeblement of pulse.

Operation. On opening the abdomen some odourless gas escaped followed by fluid blood. On raising the right lobe of the liver a large quantity of blood welled up. In the transverse mesocolon was a tear of half-a-finger's length leading to the duodeno-jejunal flexure, and continued from there for 7–8 cm., so that the flexure was completely torn away from the vertebral column. During the manipulation blood poured from a large vein. The lower horizontal portion of the duodenum was found torn away from the spine, only about a fourth part of the posterior wall remaining in position, and the head of the pancreas was denuded of peritoneum. The tear in the bowel was sutured and the duodeno-jejunal flexure stitched up as far as possible in its natural position. The retroperitoneal space at the head of the pancreas was packed with iodoform gauze. The tear in the mesocolon was partly sutured and partly utilised in performing a posterior gastro-enterostomy with a Murphy's button. Drainage tubes were inserted into the left lumbar region and the pelvis. During the operation which lasted $1\frac{1}{2}$ hours the area was frequently irrigated with normal saline. For two days intravenous saline and nutrient enemata were alone given, and on the third day tea was allowed by the mouth. On the thirteenth day the lumbar drain was removed and a rubber tube substituted for the Hegar tube in the pelvis. The packing was removed on the twentieth day.

Six weeks later the abdomen had to be re-opened for ileus. In the upper abdomen the intestines were covered with false membrane and one of the jejunal coils was found dragged on by an adhesion and kinked. The adhesion was divided and uninterrupted recovery ensued.

Steinthal discusses at length the mechanism of the injury in

this and similar cases. Three causes of subcutaneous rupture are recognised—bruising, increased internal pressure in the portion of intestine implicated, and detachment by dragging. In this case the first two could be excluded. Two factors probably determined the nature of the injuries, a horizontal force (the onward passage of the wheel) dragging upon the duodeno-jejunal flexure and causing the tear of the third part of the duodenum, and a vertical force causing the tear in the mesocolon. The latter has been ascribed by Hertle to the wheel skidding downwards on the convex surface of the vertebral column. The recognition of the mechanism of these injuries has in the writer's opinion a practical bearing upon the early diagnosis of and intervention in these cases, before the classical symptoms of the lesion appear, when it is too late.

G. R. Mill.

The Causes and Operative Treatment of Umbilical and Ventral Hernia.

Barker (Arthur). *Practitioner,* February, 1908.

The author of this article states that the reason why ventral hernia is so frequent a result of abdominal operations is that scar tissue, even of aseptic wounds, has rarely the strength of the tissue it is designed to replace, and that the repair of the incision takes place under conditions of unrest and irregular strain from respiration, vomiting, etc., not present in other parts of the body.

The umbilicus, which is a physiological scar, remains an admittedly weak spot through life, and in infants subject to cough, crying or vomiting, umbilical hernia is frequently present.

The causes of umbilical hernia are then, the presence of a scar, at a spot where there are strains in three directions, vertically by the two recti, laterally by the forces compressing the contents of the abdomen and at the same time from within outwards by the same. This is also the general scheme of the formation of a ventral hernia, surgical or other, in any part of the abdominal wall.

Barker rightly insists that in performing a radical cure of these herniæ, we cannot rely upon a simple drawing together of the edges of the ring, after replacing the contents.

Another factor militating against the success of a radical cure is the bulk of the contents of the sac, if replaced in the abdomen.

For this reason it is a good plan to remove, more or less entirely, the omentum which usually forms a large part of the hernia. This omentum has frequently formed extensive adhesions to the sac, which give rise to much hæmorrhage and loss of time if an attempt is made to separate them. The best

plan is remove the omentum en bloc with the sac and overlying skin to which it is attached.

The sac is opened near the neck on its upper aspect where there are, as a rule, fewer adhesions. When this has been done, the omentum is tied off in strands, divided beyond the ligatures, the stump and gut in the sac reduced into the abdomen. The sac and skin are divided all round nearly flush with the skin level. The edges of the ring with the peritoneum is then closed in one layer by sutures. The next step depends on whether we are dealing with the smaller herniæ, with well-developed muscular walls or with large openings in weak-walled abdomens.

In the former case an attempt is made to obtain a broad band of union; after closing the ring, a suture is entered through the anterior layer of the unopened rectus sheath, about two-thirds of an inch from the line of union of the first row of sutures and is brought out of the sheath close to this line of suture.

The thread is then passed across and entered into the rectus sheath on the other side of the first line of closure and again brought out two-thirds of an inch from the point of entry.

When this row of sutures has been tightened up, it folds inwards the ridge formed by the first row of sutures and brings half an inch of the sheath of the rectus of one side in contact with the same amount of sheath on the other side. This method has proved very successful in the author's experience when dealing with small herniæ. When dealing with unusually large rings, he has followed the method advocated by Bartlett, Witzel and McGavin, making use of a filigree network of silver wire, which he constructs for each case out of a single piece of wire.

After closing the ring with the first layer of sutures the anterior layer of the sheath of the rectus on each side is opened by a curved longitudinal incision starting well above the upper end of the first line of sutures closing the ring and terminating well below it. The sheath of the rectus is then well separated on each side from the anterior surface of the rectus muscle and the filigree network laid over the first line of sutures, lying on the anterior surface of the recti. The edges of the sheath of the rectus are then drawn together over this and united in the middle line and the skin sutured as usual. It is well to put in a small gauze drain for forty-eight hours, as there is usually some collection of serum.

In the after-treatment, it is to be remembered that these patients are frequently subject to chest affections and this complication must be guarded against by placing the patient as nearly as possible in the upright position.

The substitution of local or spinal analgesia for general anæsthesia reduces the tendency to bronchitis and pneumonia to a large extent. P. R. Wrigley.

Endo-vesical Treatment of Tumours of the Bladder.

LUYS (GEORGES). (Extract from *Bulletin de l'Association Française d'Urologie*, 1907.)

THE author of this article deals with the subject under the following headings:—

1. Indications.
2. Advantages.
3. Results.
4. Contra-indications.
5. Technique.

1. While the majority of tumours of the bladder can and ought to be attacked by the endo-vesical method, it is chiefly indicated in papillomata of a small size, for in these the supra-pubic method involves risks quite out of proportion to the size of the tumour. This will, however, hold good with papillomata whatever their size, for with increase in skill from experience, it is very easy to remove even very large papillomata at several sittings. Lastly, even cancerous growths can be treated by this method, when by repeated and severe hæmorrhages, they threaten life. In this case only palliative treatment can be aimed at.

2. The advantages of this method over the supra-pubic are—

(*a*) Its risks are much less. There is no necessity in the majority of cases for an anæsthetic and the operation can be performed in the Surgeon's consulting room, the patient being able to follow his occupation during the course of treatment and not needing to take to bed at all.

(*b*) The operation is more radical, for papillomata are often multiple and of small size, and in performing a supra-pubic operation, it is easy to overlook the smaller tumours which are hidden in the folds of mucous membrane, and these often give rise to a recurrence of the symptoms after the main tumour has been removed. With the cystoscope in a distended bladder, each tumour, however small, is detected.

(*c*) The easy method of repeating the endo-vesical operation allows one to treat with ease any recurrence, while it is impossible to suggest repeated supra-pubic cystostomies.

2. The advantages of using Luys' cystoscope are that the image is not reversed and the surgeon does not need special training in order to use the cautery, and with this cystoscope the bladder is not distended with water but with air, so that the cautery acts more efficiently and is not cooled by the presence of water.

3. The author claims that after destruction by the endovesical method he has had no case of true recurrence in papillomata, and quotes an instructive case where he performed many such operations for the development of fresh papillomata in other parts of the bladder.

4. Contra-indications. The endo-vesical method is contra-indicated in large tumours and especially in malignant tumours of the base of the bladder.

Technique. Before commencing the endo-vesical treatment, it is well to examine the bladder with a prism cystoscope which gives one a large vesical field. The bladder is then completely emptied with a catheter when the direct vision cystoscope is passed and the lamp introduced into the interior of the tube. The left hand holds the cystoscope in position over the tumour while the right hand passes the galvano-cautery into the cystoscopic tube and places it in contact with the tumour when the current is switched on. In this way we can see the tumour in the process of being cauterised. The patient does not experience pain until the base of the tumour is cauterised, and this is of importance in preventing perforation of the bladder. After destroying all visible tumours the bladder is washed out with warm boric lotion and a day or two's rest in bed is advisable though not essential. P. R. WRIGLEY.

Notes on the Resection of large portions of the Small Intestine.
EVANS (H. M.) and BRENIZER (A. G.). *Comparative Surgery*, p. 59.

THE early experiments of Lenn showed that about one-third of the small intestines could be removed without danger to nutrition, and in 1899 Dreesman was able to collect 27 cases in which over 100 centimetres had been removed. And, since then, Monari has asserted that seven-eighths of the intestine may be safely excised. The only impairment resulting is some diminution in the power of fat absorption which may possibly be regained by hyperplasia of the mucosal lymphatics. There is always a compensating hypertrophy of the remaining intestine.

The most extensive resections performed by the authors on dogs have been the removal of 76·1 per cent and 84·6 per cent. of the total amount of small intestine, both followed by recovery; while the removal of 86·5 per cent., 87·3 per cent. and 92 per cent. proved fatal in 30, 51 and 97 days, there was evidence of hypertrophy only in the first of these latter experiments.

There is an interesting little footnote by Dr. Harvey Cushing observing that the animals experimented on showed a remarkable change in their dispositions, those previously amiable becoming bellicose and ferocious. LAWRENCE JONES.

Ligature of the Common Carotid: Prognosis and Complications.
FOURMESTRAUX (J. DE). *Archives Générales de Chirurgie*, 6, 6. 515.

THERE is a brief historical survey of this operation by the author who has collected 100 instances of which reports 71 were

of use. The mortality of the operation must vary widely with the conditions calling for its performance, and so collected cases must be separated into groups which show an extreme variation from 54 per cent. in cases of hæmorrhage to 70 per cent. in those of pulsatile exophthalmos.

Excluding septic complications, which are now much less common than formerly, the main danger is from cerebral affections, immediate or remote. Immediate effect on the brain is not common, but three examples are given.

Many other immediate effects can be explained by the involving of neighbouring structures, such as the vagus, in the scope of the operation.

Delayed cerebral lesions are much more frequent, appearing from ½ hour to 28 days after the operation, usually between the 1st and 4th day.

The onset of the hemiplegia is usually slow, much slower than if caused by an embolus of cardiac origin. The form of the paralysis is of the usual type generally, although aberrant forms are met with.

The prognosis is extremely grave: of 19 examples of this complication in 15 it proved fatal, in 4 there was recovery, partial or complete.

In a similar manner ocular effects, either those due to embolus in the central artery or strabismus, are very rare as immediate results, but occur commonly at a later date.

It seems impossible to explain the varying phenomena which follow the operation by any study of the arterial anatomy of the brain, normal or otherwise. The author looks rather to the pathological anatomy for explanation.

Lesions akin to softening are found to occur superficially or deeply, of varying grades according to the completeness or otherwise of the ischæmia and the duration of the symptoms. These lesions occur in the territory of the anterior, rarely in that of the posterior cerebral artery; unlike similar conditions found in medicine, in this the arteries are healthy and the cause of the change must be looked for in an ascending thrombosis of the vessels.

In the event of immediate effects, this explanation will not hold, and the author suggests they may be due to a combination of temporary or permanent lowering of blood pressure with some abnormality of the vascular anatomy. At the same time he considers that a spreading thrombosis is much more likely to occur if there is introduced the element, however slight, of infection. LAWRENCE JONES.

Treatment of Hypospadias.

SOUBEYRAN. *Archives Générales de Chirurgie*, 1908.

THIS new method is founded on that of Beck, Bardenheuer, and von Hacker, which consists of the following steps:—(1) Dissec-

tion and mobilisation of the urethra for about 3 centimetres. (2) Tunnelling the glans for the reception of the urethra. (3) Urethro-balanic sutures.

This is only applicable to those cases where the extent of failure of the urethra does not exceed 1½ centimetres, and a new operation was tried in a hypospadias with the urethral opening 1 centimetre behind the corona. A circular incision was made around the orifice so as to dissect up a collar of skin; from the incision 3 others were made, two short and transverse and one long and placed vertically along the urethra so as to allow of the turning back of flaps for the dissection of the urethra, which was freed for 3 cms. By means of a bistoury a slot was made between the wound and the normal site of the urethral opening, the new urethra opening was of a cruciform shape; through this new canal the urethra was dragged and the skin collar fixed by four sutures to the four points of the crucial meatus. The urethra being further fixed in its new position by cat gut sutures to the exposed corpora cavernosa. LAWRENCE JONES.

Division of the Posterior Spinal Roots for Amputation Neuralgia.

KNAPP (PHILIP COOMBS). *Boston Medical and Surgical Journal,* January 30th, 1908.

AUTHOR describes two cases in which this operation has been performed. In each instance a number of peripheral operations, such as excision of the cicatrix, of neuromata, or of proximal portions of the nerves, had been performed without success.

In the first case the left leg had been amputated three inches below the knee five and a half years previously. The operation described by the author proved difficult and lasted two hours, and the patient died immediately after its completion.

In the second case neuralgia had been in existence for three and a half years in the stump after amputation through the right forearm. The sixth, seventh, and eight cervical, and first dorsal posterior roots were divided on the right side; this was followed by a condition of mental excitement, which soon passed off, and there was relief from pain for some months. Two years later the condition was as bad as ever, so the wound was re-opened, scar tissue adherent to the cord was removed, and a few fibres left intact at the first operation were severed. No permanent relief from pain was, however, afforded to the patient, and the operations appear to cause some change in the cord resulting in paraplegia. GARNETT WRIGHT.

Spina Bifida.

CATES (BENJAMIN BRABSON). *Boston Medical and Surgical Journal,* January 30th, 1908.

THE author considers that if the defect is above the level of origin of the lumbar and sacral nerves, especially if there are

associated conditions of nerve involvement, a doubtful prognosis is justified. He considers as conditions favourable for operation those in which the tumour is on the dorsum and below the origin of the lumbar and sacral nerves: but he would not hesitate to operate in a case where the tumour was situated above the lower limit of the cord, provided that he felt reasonably sure that he had to deal with a meningocele only. He prefers to excise the sac and close the defect in the spinal column by a plastic method.

GARNETT WRIGHT.

The Risks of Extreme Conservative Surgery in Crushes of the Lower Extremities.

BÉGOUIN (P.). *Journ. de Méd. de Bordeaux*, January 12th, 1908.

THIS article is directed against the teaching of Reclus that primary amputation should never be employed in crushes of the lower extremities, but that in all cases, however severe the injury, an attempt should be made to save the limb by cleansing and dressings, awaiting the formation of a line of demarcation before amputating. The author maintains that there is great risk of a profound septicæmia being produced, necessitating amputation which frequently fails to save the patient. He relates three cases where an attempt was made to save badly crushed limbs, and it was necessary later to have recourse to amputation on account of septicæmia. In all three cases death resulted from septic poisoning. He therefore advises primary amputation in these cases, within the first twenty-four hours, as soon as the shock has passed off.

GARNETT WRIGHT.

The Significance of Post-operative Acetonuria.

YOUNG (ERNEST BOYEN) and WILLIAMS (JOHN T.). *Boston Medical and Surgical Journal*, January 23rd, 1908.

FROM a series of observations before and after operation and from a review of the literature of the subject, these authors arrive at the following conclusions:—

1. That acetonuria is a common accompaniment of a large number of pathological conditions.

2. That in these conditions it is the result of disturbances of metabolism.

3. That the occurrence of acetonuria seems to bear especial relation to disturbances of the gastro-enteric tract.

4. That possibly many of the cases of reported acetonuria following operation were the results of other diseases, especially sepsis.

5. That the formation and excretion of acetone, and probably also of its supposed antecedents, diacetic acid, β-oxybutyric acid, etc., following operation, is the result of altered metabolism and, in the adult at least, not the cause of any constitutional disturbance.

GARNETT WRIGHT.

Post-operative Lung Complications and Thromboses after Ether Narcosis.

Otte (A.). *Muench. med Woch.*, 1907. No. 50.

Judging from the literature of the last few years and from statistics, perfect freedom from these dangers of inhalation narcosis has not yet been attained. Post-operative pneumonia is still very frequent, particularly after laparotomy. The writer describes the method employed in the midwive's school at Osnabrück since 1900. In these seven years no case of serious lung complication has occurred; on the contrary, several times patients with previous lung trouble (tubercle, asthma, bronchitis) were narcotised without aggravation of the condition. Favourable results are also obtained as regards mucus secretion during the administration. These results are attributed to:—

1. Method of administration. Schering's anæsthetic ether is used with a mask. The anæsthetic is usually given by the second midwife and is commenced in a quiet ante-room. 10 cc. ether are poured on the mask from a measure-glass, followed in two minutes by 20 cc., after other two minutes by 10 cc., and then, if full narcosis be desired, by 5 cc. every five minutes. Even more prolonged anæsthesia can be kept up by giving 5 cc. every five minutes and now and then 10 cc. The average quantity of ether for one hour is 100 grammes. The simplicity of the method permits of the administration being entrusted to an unskilled assistant. In isolated cases, chiefly alcoholic, chloroform may be used to induce the anæsthesia; in such case a larger preliminary dose of morphia (0·015 to 0·02) is recommended. The cases were all in women but included prolonged abdominal operations, gynæcological and other.

2. Precautionary measures before and after the operation. The mouth is washed out frequently with a disinfectant wash. On the evening before, the patient inhales for half-an-hour the vapour of a solution containing thymol and spirit (thymol 0·2, acid salicylic 1·0, spirit 5·0, aq. fervid ad. 200). This is repeated next morning shortly before the operation. Half-an-hour before the anæsthetic a hypodermic injection of morphia (0·01) is given. After operation the patient is carefully protected from cold air, and a warm towel placed over the face during transport. On coming out of the anæsthetic, warm vapour from the inhaler is allowed to play before the nose and mouth. The prophylactic inhalations serve to fortify the air-passages against the irritating qualities of the ether. After the operation the vapour of a simple saline solution is inhaled deeply about 3 times a day, thus ærating the lungs, preventing hypostasis and aiding the venous return. Even cases of pre-existing bronchitis of long duration have thus been cured of their cough in a few days. During the administration there is a striking absence of excessive mucous secretion.

G. R. Mill.

Pathology.

Upon the Condition of the Heart after Prolonged and Strenuous Work.

DIETLEN (H.) and MORITZ (F.). *Muench. med. Woch.*, March, 1908.

THE old belief that the heart became dilated as a result of prolonged muscular effort has gradually given way before the evidence which has been more recently produced, and the investigations of Dr. Dietlen and Dr. Moritz furnish further proof that the old idea was erroneous. Their carefully planned and well carried out observations show most clearly that not only does the heart not dilate, as a result of strenuous and prolonged effort, but, on the contrary, that it becomes definitely smaller. At the same time the blood pressure generally falls and the pulse frequently increases. The pulse soon returns to the normal rate, after the exertion ceases, but the heart does not regain its normal size until a considerable longer time has elapsed, and it may be not for a day or two.

ARTHUR ROBINSON.

The Importance of Radiographic Investigation of the Colon.

WIESNER (R.). *Muench. med. Woch.*, March, 1905.

DR. WIESNER strongly advocates careful radiographic investigation of the colon in all cases in which stenosis or other obstruction may be suspected. He emphasises his opinion by reference to a case in which, after recovery from an operation necessitated by perityphlitis, symptoms of intestinal obstruction developed. Radiographs showed very definite indications of abnormal conditions and upon a second operation being performed it was found that the cæcum and part of the descending colon had become connected with the parietal peritoneum by a strong band. The interfering band was removed, all defects were made right and the patient made a good recovery. Radiographs taken three months after the operation showed a normal appearance of the colon and the patient had no discomfort. In order that the colon shall be clearly visible in the radiographs Dr. Wiesner recommends that the following steps be taken. First, the large gut must be cleared, then an emulsion of 40 to 100 gr. of bismuth subnitr. in from 400—1,000 gr. of water or oil should be given. The quantities being varied in accordance with the age of the patient. Dr. Wiesner prefers the emulsion in oil because it is more permanent than that in water.

ARTHUR ROBINSON.

A Case of Nodular Tuberculosis of the Liver cured by Operation.

Bunzl (V.). *Muench. med. Woch.*, March, 1908.

The case recorded by Dr. Bunzl is one of considerable interest. The patient, whose family history gave no indication of hereditary tuberculosis, had suffered at eight years of age from disease of the knee which was treated by rest and medicine, under which a good recovery was made. In his twelfth year he developed enlarged glands in the neck which were removed. In his fourteenth year he suffered from middle ear disease. In his eighteenth year he came under treatment for pain and swelling in the liver region and as this did not get better an operation was decided upon in his twentieth year. The abdomen was opened, adhesions between the liver and abdominal wall were broken down and a number of hard white tumours were discovered in the right lobe of the liver. The tumours appeared to be either of a gummatous or tubercular nature and as extirpation seemed impossible the wound was closed and healed normally. Medicinal treatment was again adopted but the condition became worse and in the following year, on account of increased pain and swelling in the liver region a second operation was decided upon. The abdomen was opened and a nodular tumour mass was found embedded in and not sharply differentiated from the liver parenchyma. The tumour was removed. The removal was associated with considerable bleeding but this was controlled by the usual methods including tampons soaked in a solution of adrenalin (30 drops of the original solution in 10 ccm. of physiological salt solution). The patient made a good recovery and a year after the operation appeared to be quite free from any liver trouble. Examination of the removed tumour mass demonstrated its tubercular nature.

Arthur Robinson.

Modern Theories of the Sense of Light and Colour.

Coppez (H.). *La Presse Médicale*, Belge. Annee 60. No. 5.

Dr Coppez's article consists of a short restatement of the structure of the elements of the retina and of the theories of Young, Helmholtz and Hering concerning vision. He deals a little more fully with the suggestion of Kries that there are two different kinds of vision, the crepuscular or twilight, and distinct vision, observed respectively by the rods and cones of the retina; in association with which stress is laid upon the fact that nocturnal animals possess only rods. Dr. Coppez refers more particularly to the opinions of Rählmann which are put forward as an anatomo-physical theory. It has been generally believed that a considerable part of the light which enters the eyes is absorbed. Rählmann denies this, asserting that it is all refracted by the outer segments of the rods and cones, some of it being

destroyed by interference and the remainder escaping from the eyes along the paths by which it entered. The perceptive substance is situated in the inner segments of the rods and cones and consists of masses which are modified in association, the waves of light being rarified at the nodes of the waves and condensed at the intervals, consequently taking the case of the cones, the segments of perceptive substance will be more closely aggregated and the cones will contract the more the shorter the waves of light. The object of the so-called retinal pigment is to isolate the cones so that they will not be acted upon except by waves passing longitudinally through them. In the region of the macula the axes of the cones are parallel with the axes of the light waves travelling along the optic axis, consequently all the waves directly refracted back from the outer segments of the cones will produce a maximal effect on the inner segments. Towards the periphery of the retina the axes of the cones are placed more or less obliquely to the paths of the light rays, consequently rays deflected perpendicularly become mixed with lateral rays and colour sensations become altered, moreover the cones are mixed with rods and all the refracting surfaces are not in one plane consequently vision is less acute and distinct, from which it follows that the pseudo-anæsthesia of the periphery of the retina is purely physical. Rählmann's theory serves to explain various abnormal conditions. Thus if an effusion or hæmorrhage should displace some of the cones in the macular region the refractive surfaces will no longer be all in the same plane and distorted images must result, but as waves of different lengths are always refracted from the normal outer segments in the same manner colour sense remains intact. If, however, the striations of the outer segments of the rods and cones, upon which refraction is dependent, becomes altered by disease the refraction of the various waves will be interfered with and colour sensations will be marred. Obviously Dr. Coppez is much impressed by Rählmann's theory and he thinks that, in view of it, the previous theories must be modified.

ARTHUR ROBINSON.

The Independence of the Lobes of the Liver.

GLÉNARD (R.). *Le Progrès Médical.*

DR. GLÉNARD argues that the lobes of the liver are individualities devoted to special services and he bases his belief on embryological, anatomical, physiological, anatomo-pathological, and clinical grounds. The embryological basis is the statement of Géraudel that the organ commences as two diverticula which afterwards fuse together. The anatomical evidence is furnished by the different vascular supply of the two main lobes. The physiological data which support the view are (1) the statement of F. Glénard and Siraud and those of Seregé that the circulation

is different in different lobes, (2) the statement of Jovane and others that the glycogenetic function of the lobes is not the same, (3) the statement of Dernigès that after the ingestion of arseniate of soda more of the poison is found in the right than in the left lobe, (4) that fact that poisons and minute particles introduced into different blood vessels are not uniformly distributed in the liver. The anatomo-pathological support which Dr. Glénard puts forward is based upon a number of post-mortem examinations which appear to show that the lobes of the liver are associated with different parts of the alimentary canal and the left lobe more particularly with the stomach, the spleen and the rectum. The clinical evidence upon which Dr. Glénard depends tends to show that gastric dyspepsia, at its commencement, is associated with hyperæsthesia of the left lobe; hepatic dyspepsia with hyperæsthesia of the quadrate lobe, alcoholic gastritis with tumefaction of the right and quadrate lobes. Many other points are also quoted but the evidence throughout is mainly on the lines indicated.

ARTHUR ROBINSON.

Chronic Cystic Mastitis.

SPEESE (I.). *Univ. of Pennsylvania Med. Bull.* Vol. xx. No. 11.

DR. SPEESE points out that chronic cystic mastitis is a well recognised condition of the breast and whether it occurs in the purely cystic or the proliferative forms it is apt to be mistaken for carcinoma, puerperal mastitis of infectious origin, adeno-fibroma and the various forms of retention cysts. It is most common in women who are approaching the menopause but is also met with in young women, and as removal of the breast is not advisable without sufficient cause Dr. Speese recommends that the diagnosis should be made at the time of the operation by means of frozen sections taken from a part of the diseased organ. In view of the possibility of mastitis being the cause of indurated mammary nodules he advises the exposure of the posterior surface of the mamma by an incision running along the base of the breast to the anterior axillary fold. By this incision the lymph channels passing to the axillary glands are cut and the breast can be reflected upwards. Portions of the nodules are then excised and examined microscopically and if the diagnosis of mastitis is confirmed the nodules are to be excised by V-shaped incisions penetrating from the posterior surface of the organs and the incisions are to be closed with catgut sutures, a purse string suture being used if necessary. By these means the contour of the mamma is retained. The results are satisfactory both from remedial and esthetic aspects.

ARTHUR ROBINSON.

Anatomy of the Parathyroids.

GINSBURG (N.) *Univ. of Pennsylvania Med. Bull.*, Vol. XX., No. 11.

RECOGNISING the importance of the parathyroid bodies in bodily economy Dr. Ginsburg has carried out a series of observations with the object of defining their position and vascular supply. On the whole he confirms Halstead's statement that the parathyroid bodies lie "in the line of the channel of anastomosis" between the inferior and superior thyroid arteries, and they may be enclosed either in clefts of the thyroid sheath or in separate capsules of fibrous tisue. They are most constant along the posterior border of the gland at the level of the cricoid cartilage, and are frequent also behind the lower pole. Occasionally they are found behind the upper pole. Dr. Ginsburg confirms Welsh, Halstead and Baus in finding that the parathyroid bodies are usually supplied by a small parathyroid branch of the inferior thyroid artery, but in some sases the superior thyroid also gives off a parathyroid branch. In either case each body has its own little branch of supply. Obviously, as the author points out, care should be taken when operating upon or in the region of the thyroid body, to avoid if possible any injury to the parathyroid branch of the inferior thyroid artery upon which the life of the parathyroid bodies depends. Fortunately there is an anastomosis between the parathyroid artery of one side and branches of the main thyroid arteries of the opposite side.

ARTHUR ROBINSON.

The Neurology of the Tongue.

FLESCH (J.). *Muench. med. Woch.*, January 21, 1908.

IN a most interesting paper Dr. Flesch draws attention to the fact that whilst the abnormal conditions of the eye muscles have been fully studied and completely differentiated, and their diagnostic importance has been carefully weighed, the tongue has received comparatively but little attention though, so far as its muscles are concerned, it has points of similarity with the eye, inasmuch as it possesses extrinsic and intrinsic muscles which, as in the case of the eye, may be paralysed individually or collectively. Indeed the conditions are so similar that Dr. Flesch in devising a terminology for lingual paralyses proposes to use terms which are exactly comparable with those used in association with the eye muscles. He suggests that total paralysis of the extrinsic and intrinsic muscles shall be defined as "glossoplegia totalis"; paralysis of the extrinsic muscles "glossoplegia externa," and paralysis of the intrinsic muscles "glossoplegia interna." Dr. Flesch also gives tabular statements of the lingual conditions produced by cortical, central,

and peripheral lesions, and he draws attention to the necessity for taking care, when examining the tongue, to distinguish deviations of its path of projection due to lesions of the motor nerves of the lingual muscles from deviations due to other causes. For example in cases of paralysis of the facial nerves the mouth is imperfectly opened on the defective side and the tongue is forced towards the opposite side. Again, in paralysis of the motor part of the third division of the fifth nerve the tongue and the whole of the mandible are carried over towards the paralysed side by the action of the intact muscles of the opposite side.

ARTHUR ROBINSON.

Notes on the Physiology and Pathology of Hollow Muscles.

OKINCZYC (J.). *Le Progrès Médical*, J. xxiii., No. 5.

M. OKINCZYC points out that the muscles of hollow viscera act just as ordinary muscle does to varying or constant stimuli. Acting against well graduated resistance ordinary muscle does its work properly and grows in the ordinary way. If the work is increased it hypertrophies, and if it is over stimulated it passes into contractive tetany and finally is fatigued and can no longer perform its functions. So in the case of the muscles of hollow viscera if they have to perform more than the proper amount of work to maintain the bodily equilibrium on account of stenosis or other cause they hypertrophy, and for a time the lesion necessitating the hypertrophy may escape detection. But in the case of the intestine for example the period of hypertrophy can frequently be recognised by the occurrence of increased and often visible peristaltic waves. This stage is followed, if the cause is progressive, by one of intermittent spasmodic and painful contracture, which again in the case of the intestine draws attention to itself not only by the accompanying pain but also by the presence of temporary tumor formations which are simply nodules of spasmodically contracted gut. Next follows the immediately prelethal stage of dilatation due to the distension and extension of a now exhausted muscle. This last condition must be differentiated from the acute distension following paralysis of the muscle fibres of a hollow viscus due to septic infection or reflex action. For the prognosis of recovery in the two latter cases is much more favourable provided the exciting causes do not themselves produce a fatal termination.

ARTHUR ROBINSON.

Therapeutics.

Trypsin in the Treatment of Malignant Tumours.

Graves (W. P.) *Boston Med. and Surg. Jour.*, Jan., 1908. The writer relates his experience with injections of trypsin in six cases of recurrent cancer selected from a larger number of observations for the sake of reliability of the evidence obtained. Five were breast carcinomata, the sixth a squamous carcinoma of the cervix, and in all the cases the possibilities of surgical treatment had been exhausted and careful microscopical examinations made. All were observed for at least six months, most of them for longer, up to fourteen. Injections of trypsin were given in the usual way, commencing with 3 to 5 minims, increased to from 40 to 60 or 80.

1. In every case there was a gradual inevitable progress of the disease. Four of the six have died and the others will undoubtedly die within a few months.

2. On the other hand certain encouraging features were noted. In the mammary cases it was found possible to keep fresh nodules well under control. After a few injections the nodule would disappear or shrink greatly, and that particular nodule would not grow again. A section of such a shrunken nodule shows the remains of destroyed cancer cells, but the somatic cells of the connective tissue intact and healthy. In all cases where treatment was suspended rapid progress to ulceration took place, the treatment having apparently exerted a retarding influence. The palliative effect was most apparent in a case of carcinoma of the cervix. There was great pain in the back and profuse hæmorrhage, and a large mass filled the whole vagina. Fetor was intense. The disease was attacked by curetting and cauterisation, but fetor and pain returned. Trypsin treatment was then begun by injections into the infected area, and in addition several drams of pancreatic lotion injected into the uterus. The vagina was douched twice daily with bi-chloride and 1 or 2 oz. of pancreatic lotion (1 in 3) left in the vagina. This treatment was continued for six months with extremely small local progress of the disease, practically no pain and absolutely no odour. However, loss of weight and cachexia gradually increased, and when the injections were discontinued on account of weakness the pain and foul odour immediately returned.

The writer has also given pancreatic extract by mouth and hydrochloric acid, but the only apparent effects were obtained by direct injection. He is evidently much impressed by Beard's theory and by the prospects of the embryological line of inquiry.

G. R. Mill.

Reviews.

"Diseases of the Genito-Urinary Organs and the Kidney." By R. H. Greene, M.D., and Harlow Brooks, M.D. W. B. Saunders Company, Philadelphia and London, 1907. Pp. 536. Illustration 292. Price 21s. net.

This book is somewhat of a novelty for it is the joint work of a physician and surgeon; the object being to deal equally with the two aspects of these diseases, and to produce a thoroughly practical work based on such methods as the authors themselves have found to be of value.

On the whole the result cannot be considered a complete success; the writing is unequal, in some parts concise and clear, in others either scanty or involved.

The first few chapters are devoted to general and special methods of examining patients; excepting the description of the use of instruments, the routine means of diagnosis are not so arranged as to help the practitioner to any great extent. The tendency towards infinite multiplication of instruments is justly condemned, and preference is expressed for the "direct illumination" endoscope and the cystoscopes designed by Otis and Schapaira.

For the separation of the urine from the two kidneys segregators are not recommended, ureteric catheters are thought to be just as simple to use and far more reliable in their results.

After the usual means of examining the urine and the urethral exudates have been dealt with, the systematic consideration of renal diseases begins with a short chapter on the development, anatomy and physiology of the kidney, then follow chapters on the changes in the blood, blood pressure and eye in renal lesions.

The subject of "Bright's Disease" is discussed in 24 pages and no attempt is made to distinguish clinically between the pathological varieties beyond the rough headings of "acute" and "chronic." This is done deliberately, as the authors feel it impossible to find any variation in the symptoms corresponding to the pathological forms of the disease; the treatment of nephritis is very well expressed.

Hydronephrosis is only alluded to in one place as a predisposing cause of infection, and cysts of the kidney are omitted altogether.

The authors consider that gonorrhœa nearly always affects the whole urethra, and that the resulting stricture is most commonly to be found in the membranous part of the urethra. Surely it is incorrect to assume that sweating is more profuse in gonorrhœal arthritis than in acute rheumatism.

The idea of opening the vesiculæ seminales for the cure of gonorrhœal rheumatism is a novelty to us and should not be encouraged. Among the many illustrations of incisions for the exposure of these organs are two which appear to be of those employed by Kraske and Rydygier in excising the rectum.

The view is adopted that "enlarged prostate" is always the result of long continued inflammation, and that its presence can often be detected, if carefully looked for, early in adult life. We do not agree with the view that the absence of metastases is evidence against the "tumour theory," as this theory only regards the "tumours" as adenomata.

Occasionally the meaning of the authors is not very clear, as in the following "If as an aid in performing prostatectomy by means of some form of prostatic depressor the prostate is pulled down, a straight or some other form of incision may answer that purpose."

It seems rather an exaggeration to say that an examination of the blood in children suffering from incontinence will "frequently" reveal the presence of anæmia or malaria.

The authors are more in favour of suprapubic prostatectomy than most American surgeons and prefer Bryson's operation to any other by the perinæal route.

There are many good illustrations, particularly those of operative methods, in fact occasionally, as in the case of circumcision operations, they are almost unnecessarily multiplied.

The printing and preparation of the book are admirable, and parts of the text, such as those treating of urethral stricture and urethritis, are excellent; but still, seeing the number of really good text-books which have already appeared on this subject, the present work fulfils no particular object.

"Movable or Dropped Kidney—its Relation to Diseases of the Nervous System, etc." By C. W. Suckling, M.D. (Lond.), M.R.C.P. Birmingham: Cornish Brothers, 1907. Pp. 35. Price 2s.

This Pamphlet is made up of "Extracts from published records of practical experts on the subject in America, France, Germany, Italy, etc.," with notes by Dr. Suckling.

These opinions are brought forward in support of those expressed by the author in 1905 in his book on "Movable Kidney—a cause of Insanity, Headache, Neurasthenia, Insomnia, Mental failure and other disorders of the nervous system. A cause also of dilatation of the stomach."

The extracts, however, cannot be regarded as more than isolated statements which agree more or less with the author's view of the importance of renal mobility and of the toxic origin of insanity.

"Manual of Surgery. Vol. ii.: Regional Surgery." By Alexis Thomson, F.R.C.S.E., and Alexander Miles, F.R.C.S.E. Second Edition. London and Edinburgh: Young J. Pentland. Price 10s. 6d. net.

The second edition of Part ii. has quickly followed upon Part i., both volumes of which were only first published in 1904. We have read the volume with great interest, and where all is good it is difficult to discriminate; but perhaps the chapters on spinal diseases have been of the greatest interest, 40 pages being devoted to this subject alone. Notable features of the book are brief summaries of surgical anatomy, the detailed and very useful way in which exercises for deformities are described, the prominence given to Bier's congestion method of treatment and the strong advocacy of the sitting posture after abdominal operations. It will not generally be accepted that "Whitehead's method for excision of piles has been almost entirely abandoned on account of the loss of blood which it entails, and because it is needlessly severe for the majority of cases." As we noted in the first volume, the book is freely illustrated with some very excellent plates.

"The Year Book of the Scientific and Learned Societies of Great Britain and Ireland." Twenty-fourth annual issue. London: Charles Griffin & Co., 1907. Price 7s. 6d. net.

This important year book is quite invaluable to all scientific workers, and its matter is carefully arranged and accurate. It contains, in addition to lists of officers, etc., the titles of papers read during the session 1906–1907.

"Alcohol and the Human Body." An introduction to the Study of the Subject. By Sir Victor Horsley, F.R.S., F.R.C.S., M.B., B.S. (Lond.), and Mary D. Sturge, M.D. (Lond.). London: Macmillan & Co., 1907. Price 5s. net.

At the present time, when the question of the use and abuse of alcohol is attracting so much attention from all who are interested in the public weal, any book dealing with the physiological action of alcohol on the human body is of value so long as it gives real and reliable information. In this beautifully printed and well-illustrated volume the authors give a full account of the injurious effects produced by alcohol upon living tissues together with a brief description of the chemistry of alcohol and the various beverages containing it.

The book is written for non-medical readers, and contains sufficient elementary anatomy and physiology to enable any intelligent person to understand the actions of the various organs

and the effects of alcohol upon them, and a glossary of technical terms is appended. It is in no sense a record of original work, but a compilation from text-books and original papers, and is well described by its secondary title as an introduction to the study of the subject.

It is always of value in commencing the study of any controversial subject to have in a single volume all that can be said upon one side, and here we find all that can be said against the use of alcohol, either as a drug or an article of diet. As the authors' views upon alcohol are so well known, we feel that no harm can result from their statement of the case, but it must be remembered that there is another side to the question, and much work has been done by good observers of which no account is taken in this book. By taking any active drug, or even articles such as tea or coffee, and compiling all the injurious effects which they may produce upon the tissues an equally good case may be made out against their use. It is doubtful whether the authors appreciate the fact that the more recent pharmacological work showing alcohol to be more of a narcotic than a stimulant, and upon which they lay special stress, really does much to explain what many people consider to be its value in dietetics. Accepting, however, the point of view of the authors, the work has been well carried out, and though not in any way settling the question as to the value of alcohol, either as a drug or a food, it does present, as a good special pleader would, the strongest possible case for the prosecution.

"The Technique of Vagino-peritoneal Operations." By E. Wertheim and T. H. Micholitsch. Translated into English by Cuthbert Lockyer, M.D., F.R.C.S. Macmillan and Co., London, 1907. Price 25s. net.

This work, published in 1906, was undertaken with the object of providing a systematic description of the technique of intra-vaginal operations performed by the vaginal route. For this purpose photography has been extensively used and the illustrations (138 in number) form the most striking feature of the book. The photographs are taken from the cadaver, the symphysis pubis having been previously divided to render the field more accessible. The result has been a series of excellent photographs illustrating the various stages of each operation. It must, however, be remembered that the division of the symphysis has made the exposure of the parts much more complete than is possible in the living patient and the various operations are thus made to appear more simple than is really the case. In the text a concise description is given of the technique of each operation, but no attempt is made to consider the indications in detail. In exposure of the appendages the authors prefer anterior colpotomy followed by complete delivery of the uterus

into the vagina; this route is also recommended for the removal of ovarian tumours. In the treatment of procidentia Wertheim advocates intra-vaginal fixation of the uterus, the fundus being drawn through the anterior colpotomy wound and sutured into the vaginal wall; this may be combined with shortening of the utero-sacral ligaments. The methods of performing hysterectomy for various conditions are lucidly illustrated. A full account is given of Schuchardt's para-vaginal operation for carcinoma of the cervix, a procedure which affords a wide field of view and renders possible the removal of a considerable portion of the parametrium.

The scope of vaginal surgery has been widely extended during recent years and this work should be thoroughly studied by all who undertake these operations as in many cases success can only be obtained by careful attention to details of technique.

Dr. Cuthbert Lockyer is to be congratulated on having so efficiently carried out the task of translation and thus rendered this valuable work available for those who do not read German. He has scrupulously followed the original text throughout. The letterpress and the reproductions of the photographs reflect great credit on the Publishers.

"Life Insurance and General Practice." By E. M. Brockbank, M.D. (Vict.), F.R.C.P. London: Henry Frowde, 1908. Price 7s. 6d. net.

Dr. Brockbank's book on Life Insurance and General Practice will prove of great service to the profession. It is written from the point of view of the ordinary examiner, not of the expert, and it gives just that information which such an examiner usually lacks. In making examinations for life insurance, the medical practitioner as a rule feels but little difficulty in forming an estimate of the actual physical condition of the applicant, as he sees him; his chief difficulty lies in judging of the effects on expectation of life of faults in the family and personal history. It is mainly in these directions that Dr. Brockbank's book will be of immense assistance to the examiner. It gives in concise form some of the chief results of the accumulated experience of life offices, and there can be no question that its use should materially improve the value of insurance reports.

The book opens with a detailed account of the points which should be observed in making an insurance examination; but the bulk is devoted to the consideration of impaired lives, that is, of those lives presenting some defect in history or physical condition, for the proper estimation of the value of which some special knowledge is required. We cannot criticise these chapters in detail, for they cover a large amount of ground. Probably those will be especially appreciated which deal with

the bearing of tubercle, syphilis, alcoholism, albuminuria, and glycosuria. In the chapters devoted to these conditions will be found not only the results of the author's experience, but a very valuable review of the opinions of leading authorities. Especially is this the case with tuberculosis, the bearing of which in family history is summarised in a series of rules which examiners will do well to study before expressing an opinion on the value of lives suffering from defects of this nature.

In conclusion we can only repeat the opinion that the book is one which should be of real service in a difficult and rather neglected branch of medical work.

"Skin Affections in Childhood." By H. G. Adamson, M.D. (Lond.), M.R.C.P. Oxford Medical Publications: Henry Frowde. London: Hodder and Stoughton, 1907. Price 5s. net.

The tendency to over-specialise and divide up medicine and surgery into small compartments is unfortunately one which appears to be on the increase, and at first sight a book such as this seems to be superfluous in view of the many excellent manuals of dermatology and diseases of children. A careful perusal, however, shows that the author has in this case been justified; the appearances and course of many cutaneous disorders are so different in children from what is seen in adults, upon which the ordinary text-book descriptions are based, that a clinical description from the author's point of view has a certain freshness and the important differential points are more emphasised. Moreover, a certain number of morbid conditions of the skin are peculiar to children, and to these more space can be devoted than is available in a complete text-book of dermatology. The arrangement and classification is somewhat different from that in ordinary use, and though not strictly scientific is clinically convenient. The congenital affections are first considered, next those due to physical causes, then follow the parasitic diseases, toxæmias, neuroses, and, finally, unclassified affections which include, amongst others, such important diseases as eczema, psoriasis and alopecia areata. The descriptions are sufficient, though elementary in character, and the very rare diseases are only briefly mentioned. Much attention is devoted to treatment, including the X-ray treatment of ringworm and the "Light" treatment of lupus vulgaris.

Dr. Adamson has enjoyed unusual opportunities for the study of infantile dermatoses, and has made the most of them. This little book will be of especial use to medical officers in children's hospitals and to general practitioners who often find more puzzles in the cutaneous aberrations of their infant patients than in any other field of general practice. Twelve useful plates illustrate some of the more important conditions, and a formulary is added.

"Light and X-Ray Treatment of Skin Diseases." By Malcolm Morris, F.R.C.S. (Ed.), and S. Ernest Dare, M.D. Twelve plates. Cassell & Co. Price 5s. net.

This little book embodies the results of the authors' work in the treatment of skin diseases by the Finsen light, X-rays, radium and high-frequency currents during the last few years.

The first four chapters briefly describe the methods used and the effects produced, while the remaining seven chapters deal with cases and results; some of these cases have been previously published in the journals. As might be expected, lupus, rodent ulcer and ringworm afford the most satisfactory results, and to these diseases the bulk of the space is given; nine out of the twelve plates illustrate the condition of the patient before and after treatment for these conditions. On the whole, the authors have reason to be satisfied with the results of their work and speak with commendable moderation. The one thing which is evident is that for success in the use of these agents experience in the selection of suitable cases is of the first importance.

A good but by no means exhaustive bibliography concludes a useful volume in this series of "Modern Methods of Treatment" which already includes "Serums, Vaccines and Toxins," by Dr. Bosanquet; "Open-air Treatment of Pulmonary Tuberculosis," by Dr. Burton-Fanning; and "Organotherapy," by Dr. Batty Shaw.

"A Pharmacopœia for Diseases of the Skin." Edited by James Startin, Senior Physician to the London Skin Hospital. Sixth Edition. Bristol: John Wright & Co., 1907. Price 2s. 6d.

This little formulary, obviously designed for the use of students at the London Skin Hospital, has apparently achieved sufficient popularity to reach its sixth edition, and may be useful to many practitioners who are in doubt as to the routine treatment of skin affections. This edition is almost identical with the fifth, which appeared in 1903, but some additions have been made to the formulæ and therapeutic index. Dietetic and general directions are concisely given and a classification of skin diseases completes the book. In so small a work with repeated editions misprints should not be found; the omission of "ad" in the formula for "Pasta Resorcini" on page 37 seriously alters the strength of the preparation.

"Prostatic Enlargement." By Cuthbert S. Wallace, M.S., F.R.C.S. Hy. Frowde, Oxford Medical Publication. London: Hodder and Stoughton. Price 12s. 6d. net.

This publication is a masterly monograph and the most complete with which we are acquainted on enlargement of the

prostate gland. The author makes out a clear case for prostatectomy as being the only operation beneficial in this condition, disposing finally, it is to be hoped, of the antique operations vasectomy and castration, which are still said to be practised, although shown to be useless eighty years ago.

After reading the arguments advanced by the author one cannot but be convinced that he is right in his contention, that the "so-called capsule" of the prostate is really compressed gland tissue, and that those who maintain that total prostatectomy is usually performed are mistaken.

The morbid anatomy and histology are dealt with in a thorough manner, an interesting chapter by Dudgeon on the Bacteriology of the Urine and Prostate being introduced, which, while adding little to our knowledge of the ætiology of enlarged prostate, shows that there is no evidence to prove that the gonococcus is responsible for this condition. The author has gone at length and thoroughly into the general and operative treatment to be employed, explaining clearly the details and dangers of the perineal and suprapubic operation. A short chapter on Carcinoma of the Prostate concludes the work.

This book, which is profusely illustrated by excellent drawings, many of which are original, will undoubtedly be a book of reference for a long time to come, and should be in the library of every operating surgeon.

"Diseases of the Nose." By Ernest B. Waggett, M.A., M.B., B.C. (Cantab.). Oxford Medical Publication, London, 1907. pp. xii.—282. Price 5s.

This is evidently intended as the companion volume to Barcoyle's "Diseases of the Larynx."

The book is not written in the form of a systematic treatise, but as lectures to students—"intended to be read, as they were written, rapidly from cover to cover." It is difficult to gauge to what class of students the author's lectures are addressed, part of the instructions being elementary, part of it too advanced for the ordinary student. For the latter we think more weight should should be laid on symptomatology and diagnosis, whilst the full description of operations, requiring all the skill of the specialist, should be reserved for the larger text-books, intended for those who require special instruction, and seem to us out of place in lectures to beginners.

The illustrations are largely original, clear, and to the point, the book is one which can safely be recommended to all those who wish to take a rapid survey of rhinology.

"Aids to Pathology." By Harry Campbell, M.D. 16mo, pp. 176. Baillière, Tindall & Cox. Price 3s. 6d.

We are agreeably surprised on reading Dr. Campbell's "Aids to Pathology" to find that it is rather different from the ordinary

"cram" book. The section on kidney disease and its relation to arterial hypertonus, and that on immunity are quite instructive, and present a good summary of our present knowledge of these subjects. But this high standard is not maintained. If this kind of book is to be a help to the student and not a stumbling-block it is essential that the information supplied should be accurate, though necessarily meagre. It is worse than useless, for example, to inform him that the diffuse amyloid spleen occurs most commonly in syphilis, while the sago form is associated with tuberculosis; and there is no excuse for confounding the mucinoid degeneration of the so-called "colloid" cancer with true colloid. The classification of the necroses into "focal," "fat," and "coagulative" necrosis, is, to say the least of it, rather illogical.

"Preventable Blindness." By N. Bishop Harman, M.A., M.B., F.R.C.S. London: Baillière, Tindall & Cox, 1907. Pp. 109. Price 2s. 6d. net.

The book is the outcome of a desire to discuss the question of the prevention and treatment of ophthalmia neonatorum not only from the standpoint of a surgeon but also of that of a political economist, and the aim is chiefly to sum up the evidence in favour of action by the State to reduce the number of the children whose vision is lost or impaired by the disease.

Of the various methods already advocated to this end the author strongly favours that of compulsory notification. He thinks that by this means early and therefore more efficient treatment would be secured; further, repeated occurrence in a practice would become a disgrace and lead to grater care. In France the method was legalised in 1903, and it would appear that any Health Authority in this country could under the powers of the Infectious Diseases (notification) Act, 1889, place this disease on the list, subject to the consent of the Local Government Board. The matter is considered to be especially urgent now because the effect of the Employer's Liability Acts will be to exclude from employment persons whose sight is not up to the average and who may in consequence be thrown on the rates.

The earlier part of the book is devoted to statistics, re incidence and results. Next follow chapters on clinical characters, bacteriology and treatment.

It is to be hoped that its influence will greatly help in this direction of the prevention of that disease which produces such a detrimental effect on the lives of so many innocents.

223.

THE MEDICAL CHRONICLE.

A MONTHLY RECORD OF THE

Progress of Medical Science.

THE VALUE OF OPSONIC METHODS IN DIAGNOSIS AND TREATMENT.

A report from the Clinical Laboratory, Royal Infirmary, Manchester.

By G. E. Loveday, M.A., M.B. (Cantab.), *Director of the Clinical Laboratory, Royal Infirmary, Manchester,*

and

Albert Ramsbottom, M.D. (Vict.), *Assistant-Director, Clinical Laboratory, Royal Infirmary, Manchester.*

II. CASES TREATED—*continued.*

Case xl. *Tuberculous Adenitis.*

Ellen R., age 22, was sent by Mr. Wright on 16th April, 1907. She was suffering from tuberculous adenitis of the neck. There were greatly enlarged glands on the right side of the neck extending in a chain from the mastoid process to the clavicle, and two smaller glands in front of the sterno-mastoid at the angle of the jaw on the right side and one in the posterior triangle of the neck. There were no enlarged glands on the left side.

Her tubeculo-opsonic index was ·83. She had eight inoculations of $^1/_{2500}$ to $^1/_{1500}$ mg of tuberculin up to 7th August, 1907, when she stopped coming for treatment as she could not afford to leave her work, being the only regular wage earner in the family.

During the time she was under treatment, a period of four months, the glands diminished considerably in size, and Mr. Wright reported on July 26th, 1907:—

"The improvement is especially marked as no operation was done."

CASE XLI. *Tuberculous Necrosis of Lachrymal and Nasal Bones.*

Hetty H., age 11 years, was sent by Mr. Ray on 27th June, 1907, with tuberculous necrosis of lachrymal and nasal bones of 15 months duration. Her opsonic index was ·94. Mr. Ray's account and report of this case, November 19th, 1907 :—

"The patient Hetty H., aged 11 years, who was first seen by me on 21st June, 1907, was suffering from tuberculous keratitis and from tuberculous periostitis of the nasal and lachrymal bones, with necrosis on the right side of the nose, the bridge of which was much thickened, partly by periosteal deposit of tubercle and partly by a solid œdema of the subcutaneous tissues.

On the right side there was a sinus leading to the necrosed patch on the lachrymal bone. I sent this patient for treatment by the opsonic method, and did not see her again until to-day, when I found the parts completely healed, the bridge of the nose reduced to its normal size, and the cornea practically clear. I understand that she has had seven inoculations, and that in addition to this she had an operation at the Royal Eye Hospital by Dr. Clegg on 30th September, 1907, when the sinus was scraped, and the walls of same removed.

This seems to me one of the most striking and most favourable results that I have seen in such cases. When I first saw the patient, an operation to remove the diseased tissues would have been extensive and serious, and the combination of a slight operation with inoculations has been attended with the happiest results."

The dose of tuberculin administered in this case varied from $^1/_{4000}$ to $^1/_{2000}$ mg.

CASE XLII. *Tuberculous Iritis.*

Dorothy N., aged 16, suffering from tuberculous iritis of both eyes, was sent to us by Mr. Ray on June 27th, 1907. The condition was very advanced, both pupils were blocked by white material. The patient could only see large moving objects.

Her opsonic index was 1·00. She had four inoculations of $^1/_{4000}$ mg to $^1/_{2000}$ mg tuberculin over a period of 2 months without benefit, so that the treatment was abandoned.

Dr. Clegg reports on 26th February, 1908:—

"Dorothy N. was under my care at the Royal Eye Hospital in June, 1907. The case was considered to be tuberculous from the clinical appearances, but it cannot be denied that there was some doubt as to its real nature and origin. There was no improvement from opsonin treatment."

Case xliii. *Multiple Arthritis.*

Edith J., a little girl, was admitted under the care of Dr. Cunliffe, suffering from multiple arthritis. There was swelling of both wrists with limitation of extension, especially the left. The joints of both hands were also affected. In addition both hips and both knees were affected, the knees being fixed in a position of flexion almost to a right angle. At Dr. Cunliffe's request the tuberculo-opsonic index was estimated with a view to the determination of the possible tuberculous nature of the disease. The index was found to be rather low, ·66, a result consistent with tuberculosis. Upon this, inoculations of tuberculin were given, to each of which the index readily responded, reaching as high as 1·39. But after four inoculations there was no change in the patient's condition and the treatment was abandoned. Dr. Cunliffe's report:—

"Edith J., suffering from arthritis of Still's type. Her opsonic index for tubercle bacilli determined in order to ascertain the likelihood of the case being tubercular in origin. The findings pointed strongly to a tubercular origin. The nature of the reaction to tuberculin injections also favoured this view. A few tuberculin injections were made as a therapeutic measure combined with Bier's treatment, but no appreciable improvement took place in the joints. The general condition continued satisfactory."

Case xliv. *Tuberculous Adenitis.*

Edith E. D., aged 17, was sent by Mr. Burgess on July 29th, 1907, with tuberculous ulceration of the skin and enlarged

glands of several years duration. Her opsonic index was ·55 to tubercle. In seven months she has had nine inoculations of $^1/_{4500}$ to $^1/_{3000}$ mg of tuberculin, and is still under treatment. In addition eight inoculations of a staphylococcic vaccine have been given.

Mr. Burgess saw her again on 3rd February, 1908, and reported as follows:—

"Edith D., aged 17, came to my Out-Patients on July 29th, 1907, suffering from tuberculous ulceration of skin, and enlarged glands, and was sent for treatment by opsonic methods on that date.

She had then an enlarged gland beneath the chin the size of a large nut, and an enlarged gland a little smaller at the angle of the right jaw. On the neck beneath the left ear was an area of induration $\frac{3}{4}$ inch in diameter, and covered with a scab over an ulcerated surface $\frac{1}{4}$ inch across. At the back of the neck was a similar thickening, a chain of small shotty glands could be traced down to the clavicle along the anterior border of the left trapezius muscle from this induration. I saw her again to-day, February 3rd, 1908, when I found that the gland beneath the chin is about half its original size. The gland at the angle of the right jaw can still be definitely felt. The thickening below the left ear is now less, half an inch in diameter as against three-quarters of an inch before treatment, and still covered with a scab. At the back of the neck the induration is much less. From this thickening a chain of small shotty glands along the anterior border of the left trapezius can be felt unchanged.

CASE XLV. *Tuberculous Adenitis.*

Alice H., aged 26, suffering from enlarged tuberculous glands in the neck of 6 years' duration, and a small patch of lupus behind the right ear, was sent to us by Mr. Ray on September 6th, 1907. Her tuberculo-opsonic index was 1·19. Up to the present time she has had 9 inoculations of $^1/_{4000}$ mg to $^1/_{3000}$ mg of tuberculin, and is still under treatment. Mr. Ray's account and report:—

"February, 1908. Alice H., aged 26, attended my Out-

Patients in September, 1907, with enlarged tuberculous glands in the neck of six years' duration, and with a small area of lupus behind the right ear. I sent her for treatment by opsonic methods on September 5th, 1907. She had then a small area of lupus behind the right ear, an enlarged gland at the angle of the right jaw, an enlarged gland at the origin of the sterno-mastoid muscle, and, extending downwards, a chain of small glands along the posterior border, and a few along the anterior border of the sterno-mastoid muscle on the right side. On the left side over the upper part of the sterno-mastoid muscle were two glands, one very prominent. In the submaxillary region there was a large glandular mass with periglandular infiltration.

I saw the patient again to-day, February 7th, 1908, when I found there was considerable absorption of the periglandular infiltration in left submaxillary region, and two small discrete freely movable glands could be felt. The other glands show some reduction in size with the exception of the prominent gland on the left side of the neck which is caseous."

CASE XLVI. *Tuberculosis of Ureter and Cystitis.*

Margaret H., aged 42, suffering from tuberculosis of the right ureter and cystitis was sent by Mr. Burgess for treatment on 12th September, 1907. Her tuberculo-opsonic index was then 1·40; this was explained by the assumption that she had received an auto-inoculation on 5th September, when the abdomen was examined, as mentioned below, for at a subsequent examination 11 days later, 23rd September, the opsonic index was ·92, on the 26th ·85, and on the 28th October 1·00.

On this last date an inoculation of $^1/_{4000}$ mg tuberculin was given and has since been repeated. In all 5 inoculations have been given up to the present. Mr. Burgess' account and report, 27th January, 1908:—

"12-9-07. Margaret H., 42, has had great frequency of micturition, every hour, with burning pain and milky urine for 12 months. The pain is severe, and is sometimes present apart from micturition. She says she has lost flesh during the last 10 months. Abdominal examination under anæsthesia

and cystoscopy revealed the ureter palpable along its whole course and the kidney felt small. The bladder is contracted and orifice of ureter thickened. The urine contains tubercle bacilli. She commenced inoculations of tuberculin 28th October, 1907. Her general condition has now much improved and she has gained weight. She is almost entirely free from pain, and feels well except for the frequency of micturition which is unchanged. There are still tubercle bacilli in the urine."

This patient is still under treatment.

CASE XLVII. *Tuberculous Cystitis.*

Henry C., aged 24, a case of tuberculous cystitis, under the care of Mr. Burgess has had seven inoculations of $^1/_{3000}$ to $^1/_{7500}$ mg of tuberculin during five months.

Mr. Burgess's account and report, February 10th, 1908:—

"Henry C., aged 24, came to my out-patients in October, 1907. His history was that his right kidney had been removed for tuberculous disease in March, 1905, at Derby Royal Infirmary, and a further operation performed there on his right side in September, 1905. He later went to St. Mary's Hospital, Paddington, where his bladder was examined with the cystoscope and said to be diseased. Inoculation treatment was commenced at St. Mary's Hospital, Paddington, in February, 1907, and continued to the time that I saw him, when the distance between Derby and London prevented his further treatment there.

In October, 1907, he was passing his urine every three-quarters of an hour by day and hourly at night, with pain and constant desire for micturition. He was unable to sleep on his left side owing to pain and unable to support any exertion. He had some tenderness on palpation above the pubes and in the right iliac fossa and less marked in the left iliac fossa. There was no tenderness and no tumour to be felt in the left renal region. Rectal examination revealed a tuberculous nodule in the prostatic end of the left vesicula seminalis. His urine contained pus and tubercle bacilli. Inoculation treatment was then continued here, and I saw him again to-day,

February 10th, 1908. He can now exert himself without pain or fatigue, and is thinking of returning to work as he feels so much stronger. The constant desire for micturition has gone and the frequency is a little less. He can now sometimes sleep on his left side. His urine is now clear, but occasionally contains a little sediment. A few tubercle bacilli found. The condition of the abdomen is unaltered. The nodule in the left vesicula seminalis is still present but not so tender. The patient says he has very greatly improved since he first commenced treatment by opsonic methods."

This patient is still under treatment.

CASE XLVIII. *Tuberculosis of Kidney.*

Mary R., aged 20 years, suffering from tuberculosis of the right kidney and cystitis was an in-patient under Dr. Wilkinson We were requested to see this patient on October 2nd, 1907, by Dr. Wilkinson, who on this date reported her condition as follows:

"Mary R., 20, cystitis (?) tuberculous kidney. Had pain on micturition for 6 months with increased frequency of micturition, 'passes water every hour.' Pain severe. Pus in urine. Tenderness over right kidney but no palpable tumour. Temperature intermittent."

Her tuberculo-opsonic index was found to be ·46. The first inoculation of $^1/_{3000}$ mg tuberculin was given the same day, October 2nd, and on October 4th the patient was sent to the Cheadle Convalescent Hospital but left in a few days and resumed treatment as an out-patient. The coming backwards and forwards, however, led to auto-inoculations as shown by fluctuations in the opsonic index, so that at the end of six weeks, after three inoculations, her local condition being unchanged we suggested that if the treatment were to be continued, rest in bed was essential. To this suggestion she did not seem to acquiesce readily, for the next we heard was that she had been admitted into Ancoats Hospital where the right kidney was removed. We are informed that at the operation the kidney was found to be extensively diseased.

Case xlix. *Tuberculous Cystitis.*

James G., aged 20, was sent for treatment by Mr. Burgess on October 7th, 1907, suffering from tuberculous cystitis. His tuberculo-opsonic index was ·76. He had nine inoculations of $^1/_{8000}$ to $^1/_{3000}$ mg of tuberculin during four and a half months.

Mr. Burgess reports as follows:—

"James G., aged 20, attended my out-patients in October, 1907, suffering from tuberculous disease of the bladder. He had had increased frequency of micturition for four to five months, and occasionally passed blood in the urine which was thick, and micturated then every twenty minutes to three-quarters of an hour during the day and four or five times during the night. He suffered severe pain after micturition, lasting ten minutes, so that he was scarcely ever free from pain for longer than half an hour, he was very thin, and stated that he had lost weight.

I saw him again to-day, 3rd February, 1908. He is now fat, and says that his pain is greatly relieved, not being so severe nor lasting so long. The frequency of micturition is three quarters of an hour to an hour but sometimes more frequent. His weight is now 8 stone 12½ lbs. as against 7 stone 7 lbs. on 18th November, 1907, a gain of 1 stone 5½ lbs. in 11 weeks. His urine is slightly turbid, and two tubercle bacilli were found in it after very prolonged search."

He is still under treatment.

Case l. *Tuberculous Ulceration of Skin and Adenitis.*

Ethel M. P., aged 16, suffering from tuberculous ulceration of the skin and enlarging glands was sent by Mr. Smith for treatment on 14th October, 1907. Her tuberculo-opsonic index was ·87. She has had eight inoculations of $^1/_{5000}$ mg to $^1/_{3000}$ mg tuberculin during 4 months, and four inoculations of staphylococcic vaccine. Mr. Smith reports:—

"5th February, 1908. Ethel M. P., aged 16, attended my out-patients in October, 1907, with a tuberculous ulcer in front of the right ear. She had had an operation for tuberculous periostitis of the right orbit and removal of a gland in the right parotid region 12 months previously. Eleven

months later (September, 1907), she had an abscess in the situation of the scar over the parotid region which left a raised tuberculous ulcer 1 inch by ½ inch in size. She had also two enlarged lymphatic glands in the right submaxillary region—the anterior half inch in diameter, and the posterior one inch in diameter, with general fulness of the structures around them, and an enlarged gland at the angle of the right jaw half an inch in diameter. There was a scar over a bony swelling at the lower margin of the right orbit from the previous operation. I sent her for treatment by opsonic methods in October, 1907, and have seen her again to-day. The ulcer in front of the right ear has healed but for a pin point. The glands in right submaxillary region are half their original size and softer, and the gland at the angle of the right jaw can just be felt. There is only slight fulness now noticeable on the right side of the jaw."

This patient is still under treatment.

CASE LI. *Genito-Urinary Tuberculosis.*

Emily D., aged 22, suffering from genito-urinary tuberculosis was sent to us by Mr. Southam in November, 1907. The history was that for three months she had difficulty in holding her urine, and that for five months she had been losing weight. This patient had considerable shortening of the right leg, the result of previous tuberculous hip disease. On November 11th, 1907, her tuberculo-opsonic index was ·78. Up to the present time she has had six inoculations of $^1/_{7000}$ to $^1/_{5000}$ mg of tuberculin and is still under treatment. Mr. Southam's description of her condition and report:—

"Emily D., aged 22 years,, suffering from tuberculosis of the right kidney and cystitis was admitted as an in-patient under my care in October, 1907. She complained of difficulty in holding her urine, and pain on the right side of the abdomen for three months. The right kidney was palpable and tender, the urine was turbid and contained tubercle bacilli. Micturition was so frequent that it almost amounted to incontinence, and she stated that her clothes were always wet. There was no pain on micturition.

Opsonic treatment was commenced, at my request, at the end of October, 1907.

To-day, February 18th, 1908, the frequency of micturition has diminished to four or five times a day, and three or four times at night. She can hold her water for 10 minutes after she feels the desire for micturition. The urine is clear but still contains tubercle bacilli. All pain and tenderness over the right kidney has gone though the kidney can still be felt slightly enlarged. The patient's condition has improved from absolute misery to comparative comfort. I consider that the treatment in this case has proved most beneficial and especially satisfactory as the case was hopeless from a surgical point of view."

Case lii. *Infective Osteomyelitis.*

Victor L., aged 17, was a patient in Mr. Thorburn's Wards. He was suffering from osteomyelitis of both tibiæ and from pyæmia, and we were requested to see him on November 4th, 1907. Cultivations were made from the discharge from one of the wounds of one of the legs, and a streptococcus and a staphylococcus isolated. His opsonic index to each of these organisms was estimated on two occasions and found to be ·70 and ·86 to the streptococcus, and 1·09 and ·96 to the staphylococcus. This pointed to the streptococcus being the organism responsible for the condition—a deduction confirmed by the finding of the streptococcus in an axillary abscess which supervened—so that inoculations, 5 in all, of a vaccine made from this organism were given. After the first inoculation the patient's general condition improved (associated with a rise of the streptococco-opsonic index to 1·32) as it did with each subsequent inoculation, though to a less degree, until about November 23rd, when the wounds on the legs were found to be infected with bacillus pyocyaneus. From this moment the patient's condition steadily deteriorated. The bacillus pyocyaneus was isolated, and his opsonic index to it found to be ·65, but before a vaccine could be prepared the patient died, on November 26th, fourteen days after the first inoculation.

In this case the blood was cultivated on November 14th, but no organisms grew.

Mr. Wrigley, who was then Resident Surgical Officer, reports :—

" Victor L. (æt 17 yrs.) was admitted as an in-patient to Mr. Thorburn's Wards on October 14th, 1907, suffering from acute infective osteomyelitis of each tibia with acute suppurative arthritis of each ankle joint. He was admitted on the seventh day of the illness.

Condition on admission.

He was extremely ill, in a condition of profound toxæmia, pulse 130 and temperature 102°. Both legs and ankles were much swollen and there were foul ulcers on the external malleoli.

Operation, October 14th, 1907.

Each tibia was laid open from end to end and the periosteum found stripped from the bone almost over its whole length. The medulla of each tibia was full of pus as were both ankle joints, which were opened and drained.

After the operation patient improved for a day or two but gradually became more toxæmic. Then pyæmia developed, an abscess forming in the axilla, and the right wrist becoming the site of another deposit. On November 11th pus was examined and streptococci found. From this a vaccine was prepared and injected into the patient followed by an improvement both in the temperature and pulse rate. Several more injections were given and on each occasion a favourable but steadily decreasing reaction occurred.

Towards the end the wound became infected with the bacillus pyocyaneus, and this appeared to materially hasten his death which took place on November 24th, 1907.

The failure of the vaccine treatment may be attributed in part to this contamination with the bacillus pyocyaneus and in part to the late stage of the disease when this method was commenced. The favourable reaction obtained by the injections suggests that had this method been adopted at an earlier date, it might have proved successful."

Case liii. *Genito-urinary Tuberculosis.*

William P., aged 17, was sent to us by Mr. Platt, on November 11th, 1907, suffering from genito-urinary tuberculosis.

His tuberculo-opsonic index was ·98. He has had six inoculations of $^1/_{5000}$ mg to $^1/_{3500}$ mg tuberculin during three and a half months. Mr. Platt gives the following account and report on 25th February, 1908.

"William P., aged 17 years, was suffering from tuberculous cystitis with enlargement of the left epididymis, prostate and left vesicula seminalis.

He had frequency of micturition—every twenty minutes—with pus containing tubercle bacilli in the urine and he occasionally passed blood. His weight was 8 stone 6½ lbs. He gave a history of six months illness. I sent him for treatment by opsonic methods on November 11th, 1907.

I saw him again on 18th February, 1908, when the local condition showed little alteration, but there was improvement in the general health and an increase in weight of 11½ lbs."

Case liv. *Suppurative Arthritis.*

Stanley H., aged 5, was suffering from suppurative arthritis of the left knee-joint under the care of Mr. Southam. When we saw this patient on 29th November, 1907, he had an open wound of the left knee joint with two drainage tubes leading down to the joint. There was considerable discharge from the wound and the patient was suffering from general toxæmia.

Some of the discharge was cultivated and a staphylococcus isolated. To this organism his opsonic index was ·59, so that inoculations of a staphylococcic vaccine were given. After the first inoculation the index rose to about 1·00, and after the third inoculation on December 4th it rose to 1·77 on December 7th, when the boy's condition began to improve as shown by an improvement in the general health and a diminution in the amount of the discharge. After 8 more inoculations the patient was much better, and on January 20th, 1908, he was discharged to Cheadle Convalescent Hospital with a healing sinus. The doses of vaccine employed in this case varied from 25 Million to 50 Million staphylococci.

Throughout the period of treatment an interesting general relation between the opsonic index and the temperature was noted. On the whole a high index corresponded to a low temperature.

Mr. Southam reports:—

"February, 1908. Stanley H., aged 5 years, was admitted to the Infirmary on November 15th, 1907, under my care, suffering from a needle in the left knee joint with sepsis (needle had been in the knee for over a week).

On admission he had marked constitutional symptoms and the left knee was swollen, red and very tender. An operation was performed on November 15th, 1907, pus was evacuated from the knee joint and the needle removed, drainage tubes being inserted. After a few days of slight improvement the boy's condition became worse and the fever assumed a hectic type. On November 28th the knee joint was swabbed out and adhesions broken down, but the condition was such that the advisability of amputation was considered. However, it was decided to try treatment by opsonic methods. This was commenced on November 29th, 1907, and after three inoculations of a staphylococcic vaccine the condition of the knee was improved, there being less inflammation and some cicatrisation commencing at the edges of the wound. The general condition gradually improved, the fever became less, the boy looked less ill, and healthy granulations appeared. A small collection of pus was incised and drained on December 23rd. The condition gradually improved under the treatment, the drainage tubes were removed on January 7th, 1908, and the patient was discharged to Cheadle Convalescent Hospital on January 20th, 1908, having received eleven inoculations of a staphylococcic vaccine in all.

I consider that the vaccine treatment certainly saved the boy's limb and possibly his life."

Case lv. *Boils.*

Caroline P., aged 15, suffering from boils was sent to us by Mr. Ray on 3rd December, 1907. She had three inoculations of 200 Million to 500 Million staphylococci. Mr. Ray reports:

"January 25th, 1908. Caroline P., aged 15 years, was admitted as an out-patient at the Royal Infirmary, Manchester, on September 17th, 1907, suffering from a boil of the abdominal wall. This was followed by successive crops of boils in the same region, and as there was not much improvement at the end of three months treatment in the O. P. department, she was sent to you on December 3rd for further treatment. She had two inoculations with staphylococcal vaccine, and since December 16th, 1907, she has had no more boils. The skin overlying the site of the last boil is softer and more freely moveable than that over the boils previously treated in the O. P. department.

The general health is improved also, and the result has been obtained in a short time."

CASE LVI. *Sinus.*

George S., aged 20, suffering from a sinus and ulceration of the stump of the thigh after amputation was sent to us by Mr. Ray on 20th December, 1907. The pus from the sinus contained staphylococci and the staphylococco-opsonic index was ·77. Four inoculations of a staphylococcic vaccine have been given, the dose varying from 250 million to 500 million staphylococci. Mr. Ray reports:

"February 18th, 1908. George S., aged 20 years, attended my O.P. in December, 1907, with a sinus in the stump of his left thigh, and numerous ulcers along the line of union of flaps. His left leg had been amputated in July, 1907, after a compound fracture of the patella, and the wound had not healed. I sent him for treatment by opsonic methods on December, 20th, 1907, and the condition then was:—exuberant granulations along the line of the amputation wound and a sinus discharging pus; the surrounding skin was red, tense and œdematous. I saw him again to-day, February 18th, 1908, and his condition was as follows:—there is a large granulation at the orifice of the sinus which persists, but the rest of the wound has healed; the amount of discharge is less. The cellulitis is much diminished and the skin is more freely movable over the bone, and the

improvement is most striking in view of the short time that has elapsed since treatment by opsonic methods."

The patient is still under treatment.

SUMMARY OF CASES TREATED:—

1. Tuberculous.	
(*a*) Adenitis	22
(*b*) Cystitis	9
(*c*) Bones and joints	7
(*d*) Lupus vulgaris	3
(*e*) Iritis	2
(*f*) Peritonitis	1
(*g*) Abdominal sinus	1
2. Staphylococcal.	
(*a*) Furunculosis	6
(*b*) Suppurating wounds	3
3. Other Infections	2
	56

DISCUSSION OF CASES TREATED.

Tuberculous Adenitis.

Of the twenty-two cases treated improvement occurred in twenty, namely, cases 1, 4, 8, 9, 14, 15, 17, 18, 19, 22, 23, 24, 29, 33, 38, 39, 40, 44, 45 and 50. In ten of these, Nos. 1, 4, 9, 17, 18, 19, 29, 38, 40 and 50, it was considerable, in that there was great improvement in the patient's general health with complete disappearance or marked reduction in the size of the glands. With regard to the two cases, Nos. 10 and 20, in which no benefit accrued, the glands were found to be caseous in one, No. 20, and in the other, though not proved, caseation was suspected.

In view of these results we are of opinion that treatment by opsonic methods is highly satisfactory and worthy of adoption in all cases of tuberculous adenitis. Yet we believe that where the glands are caseous absorption cannot be looked for and the treatment should be combined with a small incision into the glands to evacuate the detritus. Further, where the glands are fibrotic little diminution in size seems to result from inoculations of tuberculin, but if these glands are fixed by inflammatory tissue we consider that inoculations may with

advantage be employed, before any operation for their removal is undertaken, to promote the absorption of this inflammatory tissue, thus rendering the glands freer and more easy of enucleation.

The duration of the glandular enlargement would seem to give little indication as to the likelihood of the condition being influenced by inoculations, for in those cases in which considerable improvement occurred, namely, Nos. 1, 4, 9, 17, 18, 19, 29, 38, 40 and 50, the disease had existed anywhere from one month to twelve years, whereas in the unimproved case, No. 10, for only two months.

Again, the initial index does not appear to afford much help in diagnosis but we think it has some value as a prognostic factor in that those cases in which the index is about normal do better, on the whole, than those in which it is low. For the indices of the cases in which the improvement was marked were as follows:—

Case	1	·97
,,	4	1·09
,,	9	·85
,,	17	·97
,,	18	1·05
,,	19	1·00
,,	29	·65
,,	38	1·12
,,	40	·83
,,	50	·87

In only one instance was the index below ·80, the lower limit of normal, whereas the ten cases which improved to a less degree had the following indices:—

Case	8	·60
,,	14	·71
,,	15	·51
,,	22	1·06
,,	23	·67
,,	24	·82
,,	33	1·03
,,	39	·90
,,	44	·55
,,	45	1·19

Five of these cases had an initial index below ·80.

Tuberculous Cystitis.

Nine cases in all have been treated, in six of these, namely, Nos. 28, 35, 46, 47, 49 and 51, there has been marked improvement both in the general health, as shewn by an increase in weight, and in the local condition as shewn by the loss of, or great diminution in, the pain and diminished frequency of micturition. In one case, No. 53, there has been improvement in the general health only, and in two cases, Nos. 12 and 48, there was no improvement.

In cases of tuberculous cystitis, the first good effect of the treatment noticed is usually an increase in the patient's weight with a feeling of increased vigour. This is followed by a gradual subsidence of the pain on micturition, whilst the last symptom to be ameliorated is the frequency of micturition. This sequence of events has been followed in all the cases treated by us in which improvement has occurred.

In respect to these cases, though the number we are able to bring before you is not very large, we venture to conclude from the results that inoculations of tuberculin are a valuable therapeutic agent in this malady and likely to be of considerable service in cases too advanced for treatment by the more usual methods, for in regard to case 51 Mr. Southam expressed the opinion that " the case was hopeless from a surgical point of view," and again Mr. Burgess, in his report on case 55, states, " I considered this case was much too advanced for any question of operation."

We should like to point out, however, that the improvement is gradual, and it is our custom to warn patients not to expect much improvement in their local symptoms under three or four months.

Tuberculous Bones and Joints.

This class comprises various affections.

Case 2. Tuberculous dactylitis.
Case 5. Tuberculous foot with ulceration of skin
Case 6. Tuberculous great trochanter.
Case 11. Tuberculous elbow.
Case 16. Spinal caries.
Case 41. Tuberculous lachrymal and nasal bones
Case 43. Multiple arthritis of Still's type.

Of the seven cases treated all shewed considerable improvement save one, case 43, though the effect of the treatment in case 16 is doubtful as a surgical operation was performed. In cases 11 and 41 the improvement was particularly marked.

Lupus Vulgaris.

Three cases, Nos. 21, 26 and 34, were treated. In only one of these, namely, No. 26, was there any appreciable improvement.

Tuberculous Iritis.

Two cases, Nos. 31 and 42. One case, No. 31, improved, the other, case 42, which was very advanced, shewed no improvement.

Tuberculous Peritonitis.

One case only, No. 7, has been treated. Considerable improvement occurred but the effect is doubtful as operation was performed.

Abdominal Sinus (Tuberculous).

One case only, No. 25, has been treated. No improvement occurred.

The dose of tuberculin employed in the treatment of these various cases has been guided by the opsonic index, the object being to employ that dose which would give the optimum response. This is revealed not only by a minimum " negative phrase " but by the rise of the index after inoculation and the length of time that this " positive phrase " is maintained. We have found considerable variation in individual susceptibility and that a dose which has been employed with maximum benefit in one case may be unsuitable for another. Our tendency has been to utilise doses of less magnitude than were originally given. The various doses alluded to in this report are calculated upon the assumption that 1 cc. of Koch's new tuberculin T.R. contains 10 milligrammes of dried tubercle bacilli.

Furunculosis.

Six cases, Nos. 27, 30, 32, 36, 37 and 55, have been treated with striking effect. In each instance after one or, at the most, three inoculations had been given the boils completely disappeared, and in one case only, namely, 37, has there been any

recurrence and that was after five months had elapsed, whereas for several months preceding inoculation this patient had not been free from boils.

Suppurating Wounds.

Three cases, Nos. 3, 54 and 56, have been treated.

No. 3. Abdominal sinus following laparotomy. This was a slight case and healed after one inoculation.

No. 54. Septic wound of knee-joint following infection of the joint with a foreign body (needle). This was a very severe infection in which the employment of inoculations of a staphylococcic vaccine proved most efficacious, in fact, were instrumental in saving the boy's limb.

No. 56. Suppurating amputation stump following a septic compound fracture. This patient is still under treatment and making very satisfactory progress. There is still a sinus but the discharge is less.

Other Infections.

Under this heading are included those cases which were treated by inoculations of a vaccine made from the infecting organism cultivated from the actual discharge from the patient's wound. Two such cases have been treated, namely, Nos. 13 and 52.

No. 13. Tuberculous knee with suppuration. In this case the treatment was not attended with any improvement in the patient's condition for we were unable to obtain any immunising response to the inoculations. The patient died two months after the treatment was commenced.

No. 52. Infective osteo-myelitis and pyæmia. The organism isolated in this case was a streptococcus and after inoculations of a vaccine prepared from it there was for a time some improvement, but, unfortunately, the wounds became infected with another organism, the bacillus pyocyaneus, and before a vaccine from this organism could be prepared the patient died.

In cases such as 13, 52 and 54, where the condition is serious and constantly fluctuating more numerous observations of the opsonic index are necessary and inoculations of smaller doses are required at shorter intervals than are usual in local conditions without constitutional disturbance.

III.—CASES OF INTEREST SELECTED FROM THOSE INVESTIGATED BUT NOT TREATED.

Case lxiii. Charlie J., 16, suffering from osteomyelitis of right humerus, etc.

15th February, 1907.

Opsonic indices.	To tubercle.	To staphylococcus.
Blood ...	1·08 ...	1·03
Pus ...	·96 ...	·6

From these indices it was concluded that there was a simple staphylococcal, and not a mixed tuberculous, infection. The pus also was cultivated and a staphylococcus albus grew. The patient went to Cheadle Convalescent Hospital on 18th February, 1907, and did not come for treatment on his discharge.

Case lxiv. John Mcl., aged 32, admitted September 9th, 1907, suffering from osteomyelitis of the right femur, which was operated upon on September 9th and again on September 17th. The opsonic index of his blood and the pus was taken on November 6th, both to tubercle and to staphylococcus:—

Opsonic indices.	Staphylococcus.	Tubercle.
Blood ...	1·81 ...	1·29
Pus ...	·97 ...	·59

The high indices pointed to auto-inoculation and therefore no treatment was undertaken.

Case lxxxii. D., suffering from broncho-pneumonia. The sputum was cultivated and a diplococcus isolated. Opsonic indices:—

	To Tubercle.	To Staphylococcus.	To own diplococcus.
2—11—06 ...	1·01 ...	·68 ...	1·75
5—11—06 ...	·97 ...	·92 ...	—
6—11 07 ...	— ...	·97 ...	1·82

These indices show that the organism responsible for the condition was the diplococcus isolated from the sputum and as auto-inoculations of this organism were taking place, as shown by the high index, no inoculations were given.

Case LXXXIII. Margaret A., a healthy looking girl suffering from tuberculous disease of the mastoid.

Tuberculo-opsonic indices 1·18 on 4th February, 1907, and 1·68 on 7th February, 1907. These indices were suggestive of phthisis, auto-inoculations from the mastoid being improbable. Enquiries were then made and elicited a history of six months cough and night sweats. Physical signs were discovered at both apices of the lungs and tubercle bacilli were found in the sputum.

Case LXXVIII. Alice P., 14, suffering from lupus of the tip of the nose and of the side of the neck.

Tuberculo-opsonic index on 20th, November, 1906, 1·50; on 21st November, 1906, ·54.

She had some cough and some cyanosis of the lips. As the patient was receiving auto-inoculations no treatment was undertaken.

Case LXXII. Jane B., suffering from tuberculous kidney (tubercle bacilli in the urine).

Tuberculo-opsonic indices:—

17th January, 1907	...	...	1·60
18th	,,	,,	...	...	1·06
22nd	,,	,,	...	...	1·22

These indices showed by their different values that the patient was receiving auto-inoculations, so no treatment was undertaken.

Case LXXIII. Alfred H., 28, suffering from tuberculous epididymitis and cystitis (tubercle bacilli found in the urine).

Tuberculo-opsonic indices:—

21st February, 1907	...	...	1·60
25th	,,	,,	...	...	1·39
26th	,,	,,	...	...	·98

These indices showed that patient was receiving auto-inoculations so no treatment was undertaken.

Case lxxiv. Alfred R., 34, suffering from tuberculous cystitis (tubercle bacilli found in the urine).

Tuberculo-opsonic indices:—

8th July, 1907	...	...	·93
11th ,, ,,	...	...	1·26

No treatment undertaken owing to the auto-inoculations.

IV.—CASES SENT FOR DIAGNOSIS IN WHICH THE TRUE PATHOLOGICAL CONDITIONS WERE ULTIMATELY ASCERTAINED.

Case lxxxix. Lily T., 9, admitted 15th January, 1906.

Clinical diagnosis:—Meningitis ?tuberculous; indices fluctuated from 1·01 to 1·45.

Conclusion:—Tuberculous. Patient died, April 30th, 1906. P.M. Basal meningitis.

Case xciv. Lena R. was admitted on September 6th, 1907, with meningitis. ?Tuberculous.

Tuberculo-opsonic indices:—

September 13th	...	...	·80
,, 16th	...	...	·95

Conclusion:—Inconclusive: no positive evidence of tubercle. On September 22nd, patient died and the post-mortem examination revealed tuberculous meningitis.

Case c. Henry B., aged 49, admitted October 29th, 1907, with pain in abdomen and a little ascites. The temperature was irregular. He had dulness at the left apex.

Clinical diagnosis:—?Tuberculosis lung and peritoneum. The tuberculo-opsonic index fluctuated in five days from ·70 to 1·30.

Conclusion:—Tubercle present. Patient died, and the post-mortem examination revealed tuberculosis of the peritoneum and lungs.

Case cv. Emma G., aged 40, admitted with enlarged glands in the neck.

Clinical diagnosis:—?Tuberculous.

Tuberculo-opsonic index, June 14th, 1906, ·63.

Conclusion:—Suggestive of tubercle. On March 18th the patient died.

Post-mortem report:—Sarcoma of naso-pharynx and tonsils, secondary deposits in cervical glands. Tuberculosis of cervical glands and abdominal glands. Chronic adhesive peritonitis.

Case cvi. Marjory W., aged 3 years, admitted July 14th, 1906, with distended abdomen.

Tuberculo-opsonic indices:—

July 18th	1·36	...	heated serum	·57
,, 19th	1·50	...	,, ,,	·42

Conclusion:—Tubercle present.

On July 25th, 1906, laparotomy was performed and miliary tuberculosis of the peritoneum with adhesions was found.

Case cvii. John W., aged 28 years, admitted October 28th, 1907, with epigastric pain and an irregular temperature rising to 100° and 101°F. Examination of the abdomen revealed no physical signs. On October 30th the temperature rose to 102·4 and was intermittent for a few days. On November 4th an ischio-rectal abscess was discovered which was opened and drained. On October 31st we were requested to estimate the patient's opsonic index with the view of determining whether the condition was tuberculous. Eleven observations were made:—

October	31st	...	...	·62
November	3rd	...	...	1·24 at 10 a.m.
,,	,,	...	...	1·26 at 11-5 a.m.
,,	,,	...	...	1·24 at 12-30 p.m.
,,	,,	...	...	1·13 at 3-30 p.m.
,,	,,	...	...	·97 at 11 p.m.
,,	5th	...	...	1·15
,,	6th	...	...	·62
,,	7th	...	...	1·21
,,	8th	...	...	·97
,,	11th	...	...	·88

Conclusion :—Tuberculosis present.

On November 14th tuberculous epididymitis was found. On November 16th the apex of the right lung was found to be consolidated. On November 20th tubercle bacilli were found in the sputum. On November 21st patient was discharged to the Union Infirmary.

Case cx. Joseph K., 21, admitted March 13th, 1906, with pain in right ear, drowsiness and a temperature of 102·6°F.

Clinical diagnosis :—?Tubercle. Tuberculo-opsonic index 1·30, heated serum 0·02.

Conclusion returned not tuberculous.

March 15th, operation. Exploration of lateral sinus, septic thrombus found.

Patient was discharged to Cheadle Convalescent Hospital, April 11th, 1906.

Case cxvi. Walter Y., aged 43, admitted November 26th, 1906, with ascites and a tender mass ("feeling like matted bowel") near umbilicus.

Clinical diagnosis :—?Tubercular omentum ?Carcinoma stomach. Tuberculo-opsonic indices showed fluctuation from ·81 to 1·46.

Conclusion :—Tubercle present.

Patient died, and the post-mortem examination revealed carcinoma of stomach; healed tuberculosis right lung.

Case cxviii. Annie D., 13. Clinical diagnosis :—Tuberculous broncho-pneumonia and leukæmia.

Temperature 102° to 104°. Vidal negative.

Blood examination :—R.b.c. 1,574,000. Hb. 30 per cent. Hb. index ·9. W.b.c. 15,750.

Some nucleated reds and megaloblasts.

Two tubercle bacilli found in sputa on third examination, previously two examinations negative.

Tuberculo-opsonic indices :—

5th	May,	1906	... ...	·74
7th	,,	,,	... ...	·89
8th	,,	,,	... ...	1·07
10th	,,	,,	... ...	·79

Conclusion:—That tubercle was not the main cause of the patient's condition which was extremely grave.

The reason we came to this conclusion was that the index showed little departure from the normal and no marked fluctuation.

The patient died; post-mortem examination 13th May, 1906.

Pathological diagnosis:—"Idiopathic anæmia (?of von Jaksch) broncho-pneumonia (non-tuberculous)."

There were also an old focus of tuberculosis of lung and tuberculous lymph glands.

CLASS I.—ABSOLUTE DIAGNOSIS ULTIMATELY ASCERTAINED.

No. of Case.	Nature of Case.	Clinical Diagnosis.	Opsonic Diagnosis.	Ultimate Diagnosis as Proved.
89.	Meningitis	? Tuberculous	Tuberculous	—
94.	Meningitis	? Tuberculous	Inconclusive	Tuberculous
100.	Peritonitis	? Tuberculous	Tubercle present	Tuberculosis
105.	Glands neck	? Tuberculous	Suggestive of Tubercle	Tuberculous
106.	Peritonitis	? Tuberculous	Tuberculous	Tuberculous
107.	Obscure Pyrexia	? Tuberculous	Tuberculosis	Tuberculosis
110.	Intracranial suppuration	? Tuberculosis	Non-tuberculous	Non-tuberculous
116.	Ascites and Abdominal Tumour	? Tuberculous Omentum	Tuberculosis	Carcinoma stomach and healed tuberlosis right lung
118.	Bronchopneumonia	? Tuberculous	Tubercle	Tuberculous

VALUE OF OPSONIC INDICES AS AN AID TO DIAGNOSIS.

In regard to the value of opsonic indices as an aid to diagnosis it is difficult to be dogmatic, for in only nine of the cases examined by us was the diagnosis ultimately determined. The rest we have been unable to trace, or glean anything which might throw light upon the nature of the condition. We venture, however, to think that this method may be of use as an adjunct in diagnosis for in no case, with the possible exception of one, No. 116, has the diagnosis based upon observations of the opsonic index been disproved. Moreover, we were forcibly impressed with its usefulness in case No. 83, *vide supra*, where the first intimation of the patient's suffering

from pulmonary tuberculosis was afforded by fluctuation of the opsonic index. In the above cases the diagnosis has been based upon the presence or absence of the following positive factors.

(1) An appreciable fluctuation in the opsonic index (at least ·40) in doubtful cases before and after exercise or massage of the affected part.

(2) A high, such as 1·40, or a low index, such as ·60.

(3) A difference of at least ·3 in the opsonic power of the blood from that of the tissue fluids, *e.g.*, ascitic fluid or pus.

(4) In tuberculous cases only, the maintenance of some appreciable opsonic power—·30—of the serum heated to 60°C. for ten minutes.

CHRONICLE.

Medicine.

The Intravenous Administration of Strophanthin.

HOEPFFNER (C.) *Deutsches Arch. f. klin. Med.*, Leipzig, 1908, 92, p. 485.

SINCE Fraenkel introduced this method of treatment in 1906, a good many articles have appeared on the subject. Hoepffner has treated 34 patients, giving 78 injections in all, using Boehringer's strophanthin: he recommends the dose of 1 milligramme, which may be repeated in not less than 24 hours—one of his cases, a patient with chronic nephritis and heart-failure, received and profited by 11 such doses in 6 weeks. The treatment is indicated in severe cases of heart-failure that will not react to digitalis, or in patients where an immediate effect upon the heart is desired and strophanthin is employed to pave the way for digitalis, or thirdly in cases of chronic nephritis with heart-failure. No unpleasant symptoms follow these intravenous injections, now that the drug is supplied and administered sterile. Hoepffner treated 5 cases of pneumonia with the drug, without more than a transitory success in 4. In 4 cases of pulmonary phthisis the strophanthin did not cause any slowing of the pulse. In one case the intravenous injection appeared to cause sudden death within 3 minutes; the patient, aged 45, was suffering from myocarditis and cardiac hypertrophy, with bronchitis and anasarca, and the pulse improved after an intravenous injection of strophanthin. Next day the dose was repeated, and the patient fell over in bed 3 minutes later and was dead. At the autopsy nothing explaining the occurrence was found.

A. J. JEX-BLAKE.

The Intravenous Administration of Strophanthin.

LUST (F.) *Deutsches Arch. f. klin. Med.*, Leipzig, 1908, 92, p. 282.

THE intravenous administration of strophanthin to patients with severe and uncompensated cardiac lesions has been recommended by several writers already, and Lust refers to their papers. His own experience of the method extends over 18 months, and he is

highly impressed with its merits and the good and speedy effects it has upon the failing heart. The strophanthin is supplied in sterilised solution; the dose is $^1/_3$—1 milligramme; the intravenous injections should not be given more often than once in 24 hours. Their good effect in slowing, regularizing, and strengthening the cardiac contractions, appears in a few minutes; the respirations become less rapid, and the secretion of urine is much accelerated within a few hours time. The number of injections that it is advisable to give in any given case depends upon the way in which the patient reacts to the drug. If no improvement is seen after 2 or 3 doses, treatment with digitalis, theocin, diuretin, or some other diuretic may well be begun; most cases of heart-failure with œdema, however, react well to strophanthin. Lust gives details, pulse-tracings and tables shewing the good effects of the intravenous injection of strophanthin in a number of patients with morbus cordis. He also notes that there are cases of failure of the cardiac muscle in which all drugs seem powerless; and he is as yet doubtful whether strophanthin can be employed with success to ward off heart-failure in lobar pneumonia. He has only once seen any ill effects follow its employment, due attention being paid to the fact that it exerts a cumulative action. If there is much arteriosclerosis, the dose should be $^1/_3$—$^1/_2$ milligramme, that is, 0·3—0·5 c.cm. of the solution in which the drug is supplied.

A. J. Jex-Blake.

The Etiology and Symptomatology of Cerebrospinal Meningitis.

Claytor (T. A.). *Amer. Journ. of Med. Sci.*, 1908. P. 214.

After summarising the literature on this subject the author gives in detail the history of two cases of his own. The Babinski reflex was absent in both these cases, thus confirming Koplik's observations, in which he stated that he had found it only exceptionally present in epidemic cerebro-spinal meningitis, while it occurred in 23 of 52 cases of tuberculous meningitis. In both cases there was severe headache at the onset; and vomiting followed, very soon succeeded by coma. One case regained consciousness on the third day, retaining his improved condition till the fifth day, when he rapidly sank. In this case there was a history of what was possibly a previous attack eight years before. The other case also died on the fifth day; in this case there was complete right hemiplegia. Extensive petechial rash, present in both cases, was best marked in the lower thoracic region. The *diplococcus intracellularis* was found in the spinal fluid withdrawn in each case. Autopsies were not permitted.

Frank E. Tylecote.

The Laryngeal Complications of Typhoid Fever.

RIESER (W.). *Amer. Journ. of Med Sci.*, 1908. Pp. 232—240.

LARYNGEAL inflammation and ulceration occur much more frequently in the course of typhoid fever than is recognised clinically; taking the statistics of all observers, laryngeal ulceration was present in from 10—18 per cent. of the cases which came to autopsy. Involvement of the larynx may occur at any time between the first and tenth weeks; over 70 per cent. of the reported cases occurred after the third week. The great danger of this complication lies in the fact that its onset is usually insidious, and in semi-conscious patients the occurrence of acute œdema of the glottis with symptoms of extreme dyspnœa and suffocation spasm may be the first intimation. In every case where laryngeal affection is diagnosed or suspected, the patient should be under constant observation and everything should be in readiness for immediate operative relief should it become necessary. In every one of five recently reported cases in which intubation was performed, tracheotomy had to be resorted to later. Tracheotomy relieves the acute symptoms completely, but, while life is often spared, post-typhoid laryngeal stenosis, with retained tube, is very common.

FRANK E. TYLECOTE.

A Case of Aphasia with Necropsy.

SABRAZES (J.) and DUPERIE (R.). *Journal de Médecine de Bordeaux.* February 9th, 1908.

A WOMAN, aged 45, who had been seized with aphasia and right hemiplegia in 1882, first came under the authors' observation in 1889. The right limbs were in a spastic condition. The patient could read, but was unable to write. She could give her married name, but neither her name before marriage, her Christian name, nor her age, though she made violent efforts to reply to the questions put to her. She recognised and named certain common objects, without any defect of articulation; she could not, however, remember the word bed, and called an inkstand a pencil, at once recognising that she had made a mistake, but being unable to rectify it. She could count up to five only, and could not do the easiest sum in arithmetic. Coins were recognised, but not named. Spontaneous speech was abolished, and some effort was needed to induce her to speak at all. Expression by gesture was good. On pointing in succession to the hours of a watch she indicated when the correct time was arrived at. She could not say prayers that she formerly knew, but could sing a verse of a well-known song throughout without mistake. She appeared to recognise her home and her children, and understood and carried out ordinary instructions. There were no abnormal sensory symptoms.

The patient was re-examined in 1905. The number of words at her disposal was somewhat increased, and she frequently ejaculated a few sentences such as "I cannot explain." She could not repeat the word envelope, and often named objects wrongly. There was no word blindness, no jargon aphasia, and but little tendency to paraphasia. Sensation to pain and temperature was much diminished on the right side. The left eyeball was somewhat atrophied, and there was complete loss of sight on this side. Pupillary reactions were normal.

In December, 1907, the patient was again seen. She was feeble and emaciated, and did not respond when spoken to. The right eye was turned outwards. There was marked contracture of the right limbs. The only words spoken were "Ah! mon Dieu." Albumen was present in the urine. The patient died on December 12th.

Post-mortem, there was neither cardiac nor aortic change. The kidneys were cirrhosed and cystic. The dura mater was thickened and adherent to the skull over the convexity. The left Sylvian artery was obliterated at its origin, and in the region of its distribution there was a large area of softening, involving the posterior inferior third and posterior superior half of the third frontal convolution, the insula, the lower part of the ascending parietal convolution and of the inferior parietal lobule, and the first tempero-sphenoidal convolution. The pli courbe and its lobule were spared, but the fibres issuing therefrom were damaged. The lesion extended deeply into the subjacent white matter. The foot of the third frontal convolution had escaped at its origin, but the corresponding sub-cortical region was involved in the softening. The supramarginal gyrus was damaged in its lower part, and the white fibres of the inferior parietal lobule were destroyed as far as the lenticular nucleus, the greater part of which was also destroyed. In the right frontal lobe there was a recent patch of softening, immediately above and in front of the foot of the third frontal and extending into the second frontal convolution. The area, to lesion of which Marie ascribes the symptoms of aphasia, was thus completely destroyed. On the other hand, although a part of the foot of the left third frontal convolution had escaped, a great part had been destroyed, together with the fibres leading from it. The case therefore cannot be taken as supporting either the new or the old theory of the pathology of aphasia.

JAS. W. RUSSELL.

Alcoholism and Lead Encephalopathy.

LEPINE (R.). *Revue de Médecine*, 1907.

A MAN, 32 years of age, a plumber by occupation, was admitted into Hospital on November 1st, 1907. There was no history of syphilis, but alcohol had been taken to excess. He had never

suffered from symptoms of lead poisoning. A few days previously, he had had a mild attack of pneumonia, and on the morning of admission had been seized with convulsions. These, which were epileptiform in character, were repeated at intervals during the next two days, and the patient gradually became weaker and more comatose and died on November 3rd. Lumbar puncture showed a somewhat increased pressure, but the deposit contained only a few leucocytes, scarcely more numerous than in the normal condition. The urine was free from albumen and sugar: it contained 16 gr. of urea per litre. The post-mortem examination revealed the presence of pacchymeningitis, fatty infiltration of the liver and atrophic changes in the kidneys. A very small quantity of lead was found in the liver and brain. The author considers that the amount of lead discovered was insufficient to wholly account for the convulsions, and attributes the latter to a combination of several causes, lead poisoning, uræmia and alcoholism.

JAS. W. RUSSELL.

A Case of Nuclear Facial Hemiplegia of Syphilitic Origin.

PITRES (A.). *Journal de Médecine de Bordeaux.* February 2nd, 1908.

THE patient was a married man, aged 45. One son was alive and well, and two other children had died of diphtheria. His wife had had no miscarriages. Before marriage he had had a slight gonorrhœa, but he denied all other venereal disease. He had taken alcohol to excess. In 1896, he was suddenly seized with an apoplectiform attack, in which he lost consciousness for four hours. On coming to himself, there was no paralysis, but from that time onwards he had been liable to violent attacks of pain, situated mainly on the right side of the head and face, frequent vomiting, vertigo, fainting attacks and intermittent diplopia. In 1906, he was admitted into Hospital, and improved under biniodide of mercury, but speedily relapsed on leaving the Hospital. On November 16th, 1907, on waking in the morning, the right half of the face was found to be paralysed. He complained of severe pain in the right temple, aggravated by movement of the head and eyes, and worse at night. He vomited frequently. The paralysis was complete and affected the whole of the right side of the face, but the limbs were not involved. Swallowing was difficult and articulation defective, though the movements of the tongue were intact. The paralysed muscles showed reaction of degeneration. The visual field was contracted on both sides and there was marked paresis of the right external rectus. The fundus was normal on both sides. There was complete loss of hearing in the right ear, and taste was much impaired in the right half of the tongue; the sense

of smell was also diminished on the right side. The patient was depressed and apathetic. Improvement again occurred under mercury and iodide. The author considers that the lesion involved primarily the 7th and 8th nuclei, with some extension to the 6th and 9th, and that it was due to a syphilitic endarteritis.

JAS. W. RUSSELL.

Attacks of Sleep and Epileptic Narcolepsy.

SEZARY (A.) and DE MONTET (Ch.). *Revue de Médecine,* 1907. THE authors record two cases of recurring attacks of sleep or narcolepsy. The first was that of a girl, 8 years of age, who in August, 1903, as the result of some fancied grievance, became subject to momentary losses of consciousness recurring three or four times a day. In the following year, they were of longer duration and took place 8 or 10 times daily. During the attacks the child hung down her head and moved it from side to side, murmuring "tam, tam, tam." In the beginning of 1905, the nature of the attacks changed: the head was thrown back, the eyes closed, anything held in the hand was allowed to drop, but no words were uttered. They lasted about six seconds and occurred during dressing, at meal times, and especially in the afternoon. They now varied from 10 or 20 up to 50 in the 24 hours. Bromide treatment was without effect, and punishment was equally unavailing. When coming under observation in 1907, the loss of consciousness was nearly complete. The attacks occurred on the slightest emotion, or without cause, but could be averted by shaking or pulling the hair at the earliest sign of onset. There was no warning. The patient rarely fell, and other signs of epilepsy were wanting. After coming to herself, she continued her occupation as though nothing had happened: there was no succeeding headache. Under the influence of isolation and psychotherapy the attacks rapidly diminished in number, and finally were reduced to three or four in the day.

The second case was that of a girl, aged 14, who had previously suffered from regurgitation of food and attacks of angio-neurotic œdema. In October, 1905, under the influence of emotion, she had her first attack of sleep, followed by a second, three months later. The next year, they increased in number, and in November were occurring regularly at 11-30 a.m. In December, there were three attacks daily, at 7 a.m., noon, and 7 p.m. Epileptic treatment had been of no avail. Occasionally there was preliminary nervous prostration, yawning, flushing of the face, œdema of the upper lip and noises in the ears: but all these symptoms might take place without an attack of sleep, and generally there was no warning. In that case, it came on suddenly. The patient had twice fallen in the street and hurt herself, and on two occasions, she had similar loss of consciousness on waking in the night, after which she

recovered and then went to sleep naturally. An attack could be postponed by vigorous stimulation, but it always recurred a few moments later. Sometimes the loss of consciousness was incomplete, in which case the patient heard words addressed to her "like an echo." There was no dreaming. Urine was never passed in an attack and there was no tongue biting, but occasionally the cheeks were bitten, and this occurred also at night during ordinary sleep. The duration was from five to eight minutes, and was longer as the intervals increased in length. Recovery was sudden, and was sometimes followed by weeping or headache; as a rule, however, there were no succeeding symptoms. After ten days in Hospital, the symptoms ceased altogether; but, having seen two patients suffering from hysterical pain in the hip and shoulder, respectively, she reproduced these symptoms in her own person soon after getting home. On being re-admitted and isolated, much to her annoyance, attacks of sleep and of swelling of the upper lip recurred, though only for a few days.

The authors discuss the diagnosis of epilepsy, but reject it in each case. The affection is believed to be hysterical in nature. JAS. W. RUSSELL.

The Differential Diagnosis of the so-called Chronic Rheumatisms.

HATCH (EDWARD S.). *New Orleans Med. and Surg. Journ.*

IN this article the author adopts Goldthwaite's classification and discusses the differential diagnosis of each variety.

1. *Chronic villous arthritis* is caused by injury or constant strain. It is not a general disease and not progressive. The hypertrophied villi can be felt on each side of the patella in the knee, which is the joint most frequently affected.

2. *Atrophic arthritis* is a general and a progressive affection. It commonly begins in the fingers in the second interphalangeal joint and spreads to larger joints later. Marked deformity results from this affection, and radiography shows atrophic changes in the joints.

3. *Hypertrophic arthritis* is found in elderly men chiefly, and affects the 1st interphalangeal points, the knees, hips, spine, and shoulders. The disease is usually confined to one joint and is not progressive. Lipping and bony outgrowths are found in this variety, and Heberden's nodes may be present.

4. *Infectious arthritis* caused by the presence of organisms or their toxins in the joints. The onset is usually sudden, accompanied by rise in the temperature and pulse. Two or more joints are usually affected, but the disease does not tend to spread further. There are no bony changes, but ankylosis may occur from adhesions.

5. *Gouty arthritis,* which is very rare, and is characterised by deposits of urate of soda in the soft parts around the joint.

The paper is illustrated by some excellent X-ray photographs and the value of this method of examination in assisting the diagnosis is pointed out. The manner in which the different classes may be combined is also shown, *e.g.*, a combination of atrophic and hypertrophic arthritis.

GARNETT WRIGHT.

Rheumatism under five years of age and an analysis of 100 cases of Fatal Suppurative Pericarditis in Childhood.

POYNTON (F. T.). *The Quarterly Journ. of Medicine,* April, 1908.

SOME observers, especially in America, doubt the occurrence of rheumatism before the age of twelve years, and look upon any cases so diagnosed as having been mistaken for one or other of various diseases, such as scurvy, infantile paralysis, spinal caries, congenital syphilis and various septic infections. As an answer to such a contention, there are fifty-two cases of rheumatism under five recorded in this interesting paper; all of which have been seen by the writer himself. To the fifty-two cases are appended seventeen others, who, though older children, had evidently, from the parental statements, had rheumatism before they were five years old. The disease as seen at such an early age resembles very closely that met with from five to adolescence inasmuch as in the fifty-two cases definite heart disease occurred 43 times, arthritis or arthritic pains 35 times, chorea 18 times, sore throat 10 times and nodules 8 times. The mortality is high at this early age. Eight died, and five others were in a hopeless condition. Twenty-two made partial recoveries with permanently damaged hearts.

A terminal pericarditis was present in seven of the eight fatal cases, and there were in these cases many other manifestations of rheumatism, the disease generalising as it does in other acute infections of childhood. Yet in spite of the systemic involvement and terminal pericarditis, it was impossible to mistake the condition for any other than rheumatism. In support of this is submitted the analysis of 100 cases of suppurative pericarditis in childhood, the great majority of which were pneumococcic in origin. In fifteen of these the bacteriological nature of the condition was accurately ascertained as pneumococcic. Eight were probably not of this nature, being associated with acute osteo-myelitis, otitis media, and suppurating wounds, and in these there were multiple pyæmic abscesses.

One example of a characteristic case will throw into relief the differences in the clinical course of a rheumatic and pneumococcic pericarditis. A. C., a female, aged $2^{3}/_{12}$ years, had

suffered for several weeks from whooping cough, followed by pneumonia. When she came under observation she was very cyanosed and dyspnœic. Respiration was panting, and there was irregular fever. Both sides of the chest showed signs of effusion, and later in the illness the cardiac dullness was found increased, and the sounds were noted to be faint. Double empyema was diagnosed and suppurative pericarditis suspected. Death occurred rapidly, and 1½ ounces of pus were found in the pericardium, together with pus in both pleuræ. The pneumococcus was isolated from the effusion. Thus, in this case, associated with this form of pericarditis, there were purulent pleural effusions, but there was no arthritis, and, still more striking, there was no endocarditis.

Rheumatic pericarditis is, on the whole, easy of diagnosis, but few conditions are more difficult to detect than suppurative pericarditis. In only six of the 100 cases was it detected with certainty, and two showed the rare symptom in suppurative pericarditis of pericardial friction.

The reasons for the difficulty in diagnosis help to emphasize the distinctions between rheumatic and pneumococcic pericarditis. Thus the occurrence of friction in 2 per cent. of the latter series is a very different experience to its frequency in the rheumatic form.

Only 1 per cent. of the pneumococcic cases showed any valvular lesion, and in only one was pericarditis the outstanding lesion. Three others showed evidence of old pulmonary disease. Fifty-four were associated with an empyema on one or both sides, and thirty-one with acute pleurisy or pneumonia. Two were complicated by acute pulmonary tuberculosis, and eight with septic broncho-pneumonia.

Pleurisy and broncho-pneumonia are met with in virulent rheumatic heart disease, but it is quite the exception and not the almost invariable rule for the pulmonary lesions to dominate the clinical picture.

Couple this with the fact that in an analysis of 150 cases of fatal rheumatism under twelve years, which the writer made ten years ago, 149 showed a valvular lesion, and it is doubtful whether two more striking proofs of the specific differences in these infections could be possible.

The age incidence affords convincing additional evidence. In the pneumococcic series 84 per cent. occurred before the child reached the fourth year, and 66 per cent. between the ages of one and three years. Rheumatic pericarditis, as shown by these fifty-two cases, certainly occurs with some frequency under five, but this frequency rises rapidly, with the incidence of rheumatism, up to the age of ten. Pneumococcic pericarditis followed measles in twelve instances; the rheumatic is more closely associated with scarlet fever.

Although the difficulty in the diagnosis of suppurative peri-

carditis and of its date of onset is almost insurmountable, nevertheless the post-mortem records show that it may last many weeks before proving fatal, and the illnesses associated with this condition may be grouped into three classes:—

1. The acute, running a course of about four weeks. This included twenty cases of the writer's series.

2. The sub-acute, lasting from four weeks to six months (fifty cases).

3. The chronic, with insidious onset, lasting from six months to one year (seventeen cases). E. M. Brockbank.

Cirrhosis of the Liver in Children.

Bolton (C.). *Clinical Journal,* December 4th, 1907.

A case was shown of apparent recovery from or arrest of Hanot's cirrhosis in a boy of seven. The abdomen was opened on an erroneous diagnosis of tumour which proved to be a globular projection from the right lobe. A section of the liver showed the histological features of a biliary cirrhosis.

Three distinct types of cirrhosis are met with in children.

I. Cases with direct hepatic symptoms, such as enlargement of liver and spleen, ascites, jaundice, toxic symptoms. Two classes are included in this type:—(*a*) Conditions like Hanot's cirrhosis. (*b*) Conditions like multilobular cirrhosis.

(*a*) *Hanot's cirrhosis.* The symptoms are similar to those in the adult; jaundice is early and marked. The course is fairly chronic, sometimes 4 to 6 years.

Hepatic infantilism. A very rare condition.

Infantile biliary cirrhosis. An Indian disease confined to natives.

In cirrhosis associated with *congenital obstruction of the bile ducts,* the cirrhosis is probably always the primary condition.

Cirrhosis as a *sequel of acute specific fevers* is a doubtful condition, and, in some cases, may be related to the alcohol administered during the acute illness.

(*b*) *Alcoholic cirrhosis,* very uncommon, usually occurs between 6 and 9 years of age and oftener in males. Post-mortem appearances as in adults. Pulmonary tuberculosis is rare, but tuberculous peritonitis may be present; a terminal suppurative peritonitis is not uncommon. Jaundice is more and hæmatemesis less common than in adults, but epistaxis and skin hæmorrhages equally frequent. Peripheral neuritis never occurs, but certain peculiar nervous symptoms may be present. The early symptoms tend to be latent in children. Diagnosis has to be made from tuberculous peritonitis, cardiac disease and albuminoid disease.

Congenital syphilis occurs in various forms; the disease is very amenable to mercury.

II. Cases with *ascites* as the main symptom, without jaundice or toxic symptoms. This type includes the capsular cirrhosis, two forms of which occur in association with adherent pericardium and chronic mediastinitis. *Chronic perihepatitis* is generally associated with chronic peritonitis. The signs of adherent pericardium may be absent and the only sign may be a recurring ascites. *Pericarditic pseudocirrhosis* is a cirrhosis supervening on chronic venous congestion. The symptoms are similar. These conditions are distinguished from alcoholic cirrhosis by the signs (when present) of adherent pericardium, disproportionate enlargement of spleen, inflammatory character of fluid, absence of jaundice and liver symptoms and of a history of alcohol. Other varieties are *cardiac* cirrhosis; *cardio-tuberculous* cirrhosis (a secondary tuberculous infiltration); and cirrhosis with *obliteration of the hepatic veins*, in which the cirrhosis is probably the primary condition.

III. Cases with liver enlargement as the only sign, with absence of symptoms referable to hepatic disease. This includes the enlarged liver of rickets, syphilis, tubercle, and splenic anæmia. Tuberculosis, whether in the form of pericarditis and mediastinitis or of peritonitis, gives rise to a simple cirrhosis in the vast majority of cases. G. R. Mill.

Intra-cranial Complications of Disease of the Accessory Sinuses of the Nose.

Coffin (Lewis A.). *Med. Record*, November 9th, 1907.

The writer points out that intra-cranial disease as a result of nasal suppuration has received little or no attention from writers on general medicine or surgery. Its recognition even among rhinologists is of comparatively recent date.

A general survey of our present knowledge is given, and the writer adds an account of two of his own cases, in which meningitis followed pansinusitis, to other compilations of cases by various people.

Dr. St. Clair Thomson collected 40 cases of sphenoidal sinus disease ending fatally, due respectively to meningitis in 17, thrombosis of the cavernous sinus 4, thrombosis and meningitis 13, encysted abscess of dura mater 1, intra-cranial abscess 1, meningeal septicæmia 2, hæmorrhagic encephalitis 1, phlebitis of cavernous sinus (giving rise to pyæmia) 1, intra-cranial hæmorrhage 1, suppurative encephalitis 1.

Turner collected 42 cases of frontal sinus disease with fatal results. Dreyfus collected 50 cases of cerebral complications of nasal origin which he classified as follows:—arising from suppuration in the antrum of Highmore 5, in the frontal sinus 25, in the ethmoid cells 10, in the sphenoidal sinus 16.

The writer is of opinion that sinus disease is far more

prevalent than is generally supposed, even by those whose work is confined to the nose. In a series of post-mortem examinations by some continental observers sinus disease was found to have been present in 30 per cent. of all cases coming to the dead house. In this relation Pitt's well-known statistics in which in 9,000 cases only one case of cerebral complication of nasal origin is given are of no value, since at that time, 1888, the condition of the accessory sinuses was seldom investigated either before or after death.

It is important to remember that sinus disease may occur in children; the only sinus lacking in a child one year old is the frontal which does not appear until the 7th year. Cases are quoted in this paper of sphenoidal sinus suppuration occurring at the ages of 3, 5 and 6, and one of pan-sinusitis of both sides in a boy aged 9, occurring in the author's practice, which ended fatally.

Turner was able to collect about 24 deaths from cerebral complications following operations on the frontal sinus. This mortality is due, in the writer's opinion, to the fact that many of the cases were operated on when they had already developed septic meningitis. It is suggested that in all cases with marked cerebral symptoms a lumbar puncture shall be made, and those cases showing a definitely yellow fluid shall not be operated on so that an operation which is in many cases the only means of saving life shall not be brought into discredit.

LINDLEY SEWELL.

Gonococcus and Meningococcus.

MILHIT (J.) and TANON L.). *La Presse Médicale,* January 15th, 1908.

THE authors draw attention to a form of meningo-myelitis apparently due to gonorrhœal infection, in which the clinical picture during the first few days is that of epidemic cerebro-spinal meningitis. As a rule the condition ends fatally; but sometimes it results in recovery, and in this case, with the decline of the meningeal symptoms, paralyses make their appearance which sometimes involve only the lower limbs, but at others pursue an ascending course, affecting the upper extremities and trunk. The preliminary meningeal symptoms thus mask for a time the symptoms of an acute anterior poliomyelitis. In certain of these cases a meningococcus has been obtained from the cerebro-spinal fluid, presenting numerous points of resemblance to the gonococcus, and the question arises whether there is not an intimate relation between the two organisms, the former representing a slightly differentiated form of the urethral gonococcus. In 1896, Furbringer observed a case of cerebro-spinal meningitis suddenly supervening on an

acute gonorrhœa. Death took place on the third day. On centrifugalising the cerebro-spinal fluid, a diplococcus was found absolutely resembling the gonococcus, whilst the cultures were those of the meningococcus of Weichselbaum. Starting from this fact, Pinto was able to obtain a virulent meningococcus after several successive inoculations of a gonococcus obtained from the urethra. The authors are of opinion that these cases are due to infection of the meninges and cord by the gonococcus, and they recount the case of a young man, aged 21, who had contracted an acute gonorrhœa. At the end of three weeks, the discharge suddenly stopped, and symptoms of acute anterior poliomyelitis made their appearance. On recovery from this condition, the discharge re-appeared. JAS. W. RUSSELL.

Diphtheritic Paralyses.

CHENE (H.). *Gazette des Hôpitaux*, January 18th & 25th, 1908. IN the course of a detailed review of the whole subject of diphtheritic paralysis, the author gives the following points as guides to prognosis. Localised paralyses of the soft palate are generally mild and rapidly recover. The generalised paralyses, on the other hand, are of longer duration, and it is in their course that cardiac disasters are most frequently observed. It has been stated that early paralyses—that is, paralysis coming on from five to six days after the onset of diphtheria—are generally more benign and more limited than those which make their appearance at a later period; but this is not the usual opinion. Thus, many observers have reported cases in which early paralysis of the soft palate has resulted in fatal accidents, and according to Baginski it is these cases which are peculiarly apt to be associated with cardiac affection. Albuminuria is frequently present in the early cases, and Roger states that the appearance of albuminuria in the course of paralysis is of very grave significance.

Henoch gives the following rules as to prognosis in those cases in which the heart is involved:—(1) Cardiac paralyses appearing during the first few days of the illness are of very unfavourable prognosis. (2) Cardiac paralyses of later, but sudden onset, coming on after return to health and accompanied by considerable frequency of the pulse, are almost certainly fatal. (3) Cardiac paralyses developing more slowly, when other paralyses have already made their appearance, are usually of less grave significance. JAS. W. RUSSELL.

The Thalamic Syndrome.

HARTENBERG (P.). *La Presse Médicale*, January 15th, 1908. THE essential symptoms of a lesion of certain parts of the optic

thalamus are a hemianæsthesia, only slightly affecting tactile, pain and temperature sensation, but involving pronounced loss of bony, tendinous, articular and muscular perception; severe pains in the affected parts, greatly increased by even slight stimulation; an imperfect hemiplegia, without contracture, with reflexes either normal or but slightly exaggerated, and often without the Babinski sign; and slight hemiataxia, and choreiform and athetotic movements. To these may sometimes be added sphincter troubles, anal and vesical tenesmus, hemianopia, and vaso-motor, trophic and secretory disturbances, which, however, are not essential parts of the syndrome. The onset is with mere dazing or at most a slight loss of consciousness lasting a few hours. The lesion giving rise to this syndrome is said to destroy the posterior third of the external nucleus of the thalamus, and part of the internal nucleus and of the pulvinar, together with a small number of fibres in the posterior part of the internal capsule. According to Déjerine, the thalamus is a sensory structure, from which the third sensory or thalamo-cortical neuron arises. Hence is explained the hemianæsthesia and painful sensations, the involvement of the internal capsule accounting for the slight motor disturbance. By other authorities, however, other functions are attributed to the thalamus, which has been said to contain reflex centres for respiration, movements of the heart, stomach, intestine, rectum, bladder and vagina, lachrymal secretion, co-ordination of movements, etc. Even if these functions be correctly ascribed, however, the partial distribution of the lesion may account for the limited nature of its results.

The diagnosis has to be made from the following conditions: (1) Lesion of the corpora quadrigemina, in which, in addition to hemiparesis, superficial and deep hemianæsthesia, hemiataxia and athetosis, there will be paralysis of bilateral associated ocular movements, and diminution in auditory acuity. (2) Upper pontine syndrome, or hemiplegia, superficial and deep hemianæsthesia, ataxia and athetosis, with paralysis of bilateral associated eye movements, nystagmoid movements on raising or lowering the eyes, vertigo and dysarthria. (3) Peduncular syndrome, or syndrome of Weber, including crossed hemianæsthesia, hemiataxia, hemichorea, unilateral tremor, and external strabismus due to third nerve paralysis. (4) Lower pontine syndrome, or hemiplegia hemichorea, with facial and third nerve paralysis on the opposite side. (5) Bulbar syndrome, or crossed sensory and motor paralysis, lateropulsion and myosis on the side of the lesion. (6) Cortical lesions, giving rise to hemianæsthesia, hemiplegia with contracture, clonus, exaggeration of reflexes and the Babinski sign.

Jas. W. Russell.

The Tuberculin Eye-reaction in Children.

COMBY (Professor). *Le Bulletin Médical.* November, 1907. PROFESSOR COMBY records his experiences with Calmette's reaction. He dilutes the 5 milligrammes of dried tuberculin, so as to produce a dilution of 1 in 200, not as Calmette originally recommended $^1/_{100}$. He does this because, using the stronger dilution, he had two very severe reactions. With the $^1/_{200}$ dilution he recognises three different degrees of reactions: (1) very slight, only to be recognised by careful inspection of the caruncle, and comparison with the opposite eye. (2) moderate reaction, obvious to a casual inspection. (3) Severe reaction recognisable at a distance.

He has never even in the severe cases noted any constitutional disturbance; he finds that all forms of tubercle, except those absolutely healed, give the reaction; that it is present at all stages of the active disease, even in the late stages of tuberculous meningitis; that a negative result is good evidence against the presence of active tubercle, and that there are only three sources of error; first that the slight reaction is overlooked, secondly that the reaction may be delayed for as long as 48 hours, and thirdly that it is essential that *both* eyes should be clean and healthy at the time of the trial.

He records 276 observations with a 1 in 200 dilution, 99 positive and 177 negative results. In 18 cases verified by autopsy 10 positive results and 8 negative results were confirmed.

H. THURSFIELD.

Hæmophilia.

LABBE. *Revue de Médecine.* February 10th, 1908. HÆMOPHILIA, according to the author, differs from certain cases of purpura in the fact that in the latter spontaneous hæmorrhages are the rule, while in true hæmophilia the hæmorrhages are usually provoked by some slight traumatism. There exist two types, hereditary and sporadic hæmophilia. Hereditary hæmophilia has been studied since 1832, and the laws of transmission have been established with considerable certainty, males inheriting the hæmorrhagic tendency through females who are themselves free from the taint. The essential fact in the pathology of the disease, so far as it is at present understood, is the retarded coagulation of the blood, and this would appear to be due to a deficiency in the blood of a ferment called plasmase, and also to the presence in the blood of bodies which hinder coagulation. The experiments which authorise these inferences are briefly that (1) the addition of fresh serum to hæmophilic blood produces coagulation rapidly, *i.e.*, the plasmase has been added, (2) the addition of hæmophilic serum to fresh normal blood, retards coagulation. According to Weil it

is possible thus to establish a distinction between hereditary and sporadic hæmophilia. In the hereditary disease both causes are at work; in the sporadic complaint there is no anticoagulin present; the deficiency of plasmase alone accounts for the trouble. The writer adds a good deal of speculation of a somewhat vague and indefinite character upon the hæmorrhagic tendency of certain constitutional states. The third portion of his paper is a review of the various modes of treatment. Of these two alone seem to offer any marked success. Salts of calcium in doses of 30—120 grains per diem do exercise a certain amount of influence upon the time of coagulation, but in cases of hereditary hæmophilia the effect is slight and very fleeting, and, indeed, according to some authors, non-existent. The injection of fresh horse-serum undoubtedly exercises a great effect, and in doses from 10—20 c.cm. made intravenously will produce such results that it is safe to undertake surgical procedures, which would otherwise be apt to be followed by dangerous hæmorrhage. The effect lasts, it is said, about one month, and is said by the author to be more marked in sporadic than in hereditary cases. A comment may be perhaps allowed, that we are not familiar in this country with what the author calls sporadic hæmophilia; this corresponds, apparently, to what we should call purpura hæmorrhagica, and does not, in our opinion, bear much relation to true cases of hæmophilia.

H. Thursfield.

Meningococcus Hydrocephalus.

Huber (F.). *Archives of Pediatrics*, March, 1908.

Enlargement of the head is not a necessary accompaniment of hydrocephalus. The effusion may take place early or late in the course of the disease and after a variable time may be absorbed or may lead to a fatal issue or to mental affection. The head does not reach the proportions it does in the congenital type. In a typical case, within a week or two from the onset of the cerebro-spinal meningitis apathy, vomiting, emaciation, enlargement of the head and an irregular temperature point to the development of this complication. A curious point is that periods during which the patient is much brighter mentally may occur and raise hopes of recovery, but too often the symptoms of meningeal trouble return and the case goes on to a fatal termination. The presence of hydrocephalus does not necessarily involve mental deficiency and may even be accompanied by exceptional mental power, but in the majority of the cases mental affections, sensory changes and paralysis make the patients' lives a burden to themselves and their families. Lumbar puncture has not been followed by such beneficial results as might have been expected, though it should always be tried

especially if there be any symptoms of intracranial pressure. It is, of course, of no value in the internal or ventricular variety where the foramina between the ventricles and the subarachnoid space have been closed by inflammatory processes; in these cases ventricular drainage may be tried but the results are distinctly unfavourable.

C. P. LAPAGE.

Kernig's Sign in Infancy: a study of two thousand cases.

MORSE (J. L.). *Archives of Pediatrics,* March, 1908.

DR. MORSE'S conclusions are:—Kernig's sign is almost never found in infancy either in health or disease except in meningitis. It is found so rarely in other diseases at this age that its presence in an acute disease justifies, as far as any one sign can, the diagnosis of meningitis. It is never present, however, in some cases, and in many others it is present only intermittently. It occurs with equal frequency at all stages of the disease. It has no apparent connection with the degree of intracranial pressure. It is more often present when the knee-jerk is increased than when it is diminished. It is of no value in the diagnosis between the tuberculous and the cerebrospinal forms.

C. P. LAPAGE.

Mucous or Muco-membranous Colitis.

HUTCHISON (R.). *Clinical Journal,* July 10, 1907.

WILSON (H. D.). *Edinburgh Medical Journal,* July, 1907.

THE writers agree in drawing no line between the more or less classical picture generally understood under the name of muco-membranous colitis, and those less striking cases in which the passage of mucus is not a prominent feature, or in which intestinal and abdominal disorder may indeed be overshadowed by secondary symptoms due to toxic absorption. Especially in these less conspicuous forms, the disease is probably much more prevalent than is generally supposed, and is doubtless on the increase. The precise rôle played by nervous factors is not generally agreed upon; it is prone to occur in persons of nervous constitution and to run in families, but Hutchison is of Savill's opinion (Lectures on Neurasthenia) that neurasthenia is at least as often a sequel as an antecedent of colitis. Infective bowel diseases sometimes play a part, *e.g.*, typhoid and dysentery, though the latter more usually leads to chronic colitis of the catarrhal type. Influenza figures largely, and in its abdominal form may rank as an exciting cause. With regard to the vexed question of the relation of appendicitis to this disease, Hutchison's experience is that (1) muco-membranous colitis may closely simulate appendicitis in the entire absence of the latter;

(2) where chronic appendicitis and membranous colitis exist, the appendix trouble is as likely to be the result as the cause of the colitis; and (3) when chronic appendicitis does lead to colitis, the latter is more apt to assume the catarrhal form. He believes that habitual constipation is the only cause of which it is possible to speak with confidence, but that, though some other predisposing cause must be at work, the neuro-arthritic diathesis of French writers is rather a vague conception.

Pain is probably always due to enterospasm which has been repeatedly demonstrated during laparotomy. The pain is often related to food. Wilson has found it to occur usually about two hours after, but certainly, as Hutchison says, colonic spasm may come on immediately after food and closely simulate gastric pain. Flaccidity and poor development of the abdominal wall is an almost constant feature. The abdominal signs are variable and depend upon the presence, often together, of spasm and dilatation of various portions of the colon. These factors are summed up by Hutchison as spasmodic dilatation of the ascending colon, atonic dilatation of the transverse, and spasmodic contraction of the sigmoid. Dilatation is commonest in the transverse colon, and the splash elicited on palpation may falsely suggest gastric dilatation. Gurgling or a peculiar crepitant sensation, like the feel of a bag of feathers, is mostly found over the cæcum and lower ascending colon. Tenderness is most frequently elicited over the cæcum or sigmoid. The action of the bowels is in the vast majority irregular, and loose actions may occur in association with attacks of pain. The mucus may present itself in a variety of forms, but may be overlooked unless the stools are very carefully examined after an enema. Undigested particles, especially vegetable fibre, are not uncommon. Circulatory symptoms—coldness of the extremities, etc., and notably a slow pulse, are due to toxic absorption. In practically all cases nervous symptoms are present—lack of energy, sluggishness of cerebration, mental depression, etc.

The prognosis is favourable if the condition is taken early, and even bad cases recover. Both writers advocate the Plombières treatment now carried out at Harrogate. This consists of intestinal and Tivoli douches with special dieting, massage and mineral drinks. As regards the choice of aperients, Hutchison prefers castor oil; aloin is apt to cause entero-spasm, and salines are uncertain where atony of the colon exists; calomel is useful in occasional doses which should be small—$^1/_{10}$ to $^1/_5$ grain. He advises against the employment of massage in cases where pain and entero-spasm are prominent features. Authorities are not agreed upon the subject of diet, but Hutchison believes that one leaving little residue is to be preferred, and that in severe cases it should be purely lacto-farinaceous. As to the question of surgical measures, he has seen great improvement in three cases from ileosigmoidostomy,

though in none complete cure. He thinks this operation will prove more satisfactory than appendicostomy, and he would never hesitate to recommend it in cases which had resisted all other methods of treatment. G. R. Mill.

The "Epileptic Character."

Marchand (L.) and Nouet (H.). *Revue de Médecine*, Nov. 10, 1907.

In addition to the irritability and impatience met with in many epileptic subjects, there is often a tendency towards excessive mobility of temperament. At one time depressed, hypochondriacal and convinced that he will never recover, at another the epileptic will show a sanguine and happy disposition. Often he is well satisfied with himself, and is fond of giving advice to others: at times he is cunning and jealous, and again he becomes unduly religious. It is the same with his actions: whilst sometimes prompt to carry out orders and willing to be of service, he is often dull, stupid, idle and prone to refuse work. These characteristics are, however, neither limited to the epileptic nor necessarily to be found in every case, and a series of observations are recorded in some of which confirmed epileptics have shown a normal mentality, and in others the so-called epileptic character has been met with in feeble-minded or imbecile patients, and in cases of dementia precox and general paralysis. According to the writings of Dr. Marchand, adhesion of the meninges to the cortex is found in the majority of cases of epilepsy even with a normal intelligence; and to this is added, in those cases which show enfeebled mental power, a resulting sclerosis of the cortex of greater or less depth. The alterations in character, ordinarily attributed to the repeated epileptic attacks, are, in the opinion of the writers, merely the result of changes in the structure of the cortex, and are therefore likely to be met with in other conditions in which similar changes have taken place.

Jas. W. Russell.

The Roentgen Rays in Pediatrics.

Rotch (Thomas M.). *Boston Medical and Surgical Journal*, October, 1907.

Although the Roentgen method has for some time been recognised as an important addition to our armamentaria for studying disease, especially of bones, yet its use in routine work among children has been comparatively limited, especially in so-called "Medical" cases. In children's diseases medicine and surgery overlap so easily and quickly, *e.g.*, obscure pains in the joints, treated as rheumatism and ending as osteomylitis, subperiosteal hæmorrhage treated surgically before the scorbutic nature of the disease is recognised, etc.,—that Dr. Rotch regards the Roentgen rays as one of the primary aids to diagnosis. "In many cases

it proves the expert physical examination to be wrong and influences the resulting lines of treatment to so great a degree that to diagnosticate and treat without this proof of the correctness of the diagnosis has in many cases proved to be foolhardy, dangerous, and without excuse."

The knowledge obtained from the Roentgen ray, although at present confined to certain specific conditions is gradually widening, and he insists on the necessity of the examination being made by experts: on "the full, intelligent and expert examination of the plate" and a thorough knowledge of the normal anatomy and development of the bones and organs of the child as revealed by X-rays. So important does he consider this last point that he and Dr. George, the Roentgenologist to the hospital, have prepared a complete series of radiographs of normal children for their own use. When he tells us that to be certain that the selected radiograph of each organ and joint of the body should represent the normal, he took the average of the radiography of five apparently normal children at all stages from infancy to adult life, one can form some idea of the work involved. With such an atlas at hand, the diagnosis of rickets and slight injuries to epiphyses is greatly simplified.

The Roentgen method assists, it does not replace the older methods of examination: over and over again, however, it corrects and controls an otherwise faulty diagnosis.

"In pediatrics I have found it of inestimable value, for the wonderful recuperative power which exists in children allows great opportunities for varying treatment if we can only follow the living, ever changing processes of disease every few days. Used in this way for diagnosis, the Roentgen ray shows us the primary lesions of disease, and for treatment, therefore, the knowledge thus obtained is far more important than a knowledge of the terminal lesions found at the post-mortem." The paper is well illustrated by radiographs showing shadows cast by enlarged bronchial glands, foreign bodies in the lungs, pleurisy, pericarditis, miliary tuberculosis, pneumo thorax, chronic osteo-myelitis, acute osteo-myelitis, etc. A. E. Barclay.

Six Cases of Malignant Endocarditis.

Meyer (A.). *Med. Record,* December 7, 1907.

The writer comments upon the lack of agreement still obtaining with regard to the nomenclature and classification of endocarditis. He defends Dreschfeld's clinical subdivision of "infective" endocarditis (septic, typhoid, cerebral, cardiac) on the score of convenience of study and instruction.

Etiologically, the most striking feature was the predisposing influence of pre-existing valvular disease, of which there was sufficient evidence in four of the cases, the other two being

young persons between 17 and 31 years, which was not entirely explained by the fact that his service is solely an adult one. In the children's service at Mt. Sinai out of 527 cases of all kinds in 1905, there were 43 cases of endocarditis, only one of which was malignant. The source of infection was unknown in half the writer's cases and only conjectural in the others. Blood cultures were positive in three, negative in two, and omitted in one. Autopsies were obtained in the positive cases only.

The three cases in which blood cultures were positive were those with the most striking septic or pyæmic temperature curves, though in one the blood finding was positive at a time when the curve was not pyæmic, and vice versa. In one there was no fever during the first week. Petechiæ were present at one time or another in all. In several they appeared in successive crops. In three cases they did not appear till 17, 26, and 28 days after admission. As noted by other observers, petechiæ may be found in the conjunctiva before they occur elsewhere. Blood cultures made 24 hours after fresh crops of petechiæ proved negative on two occasions, but might perhaps have been positive if made immediately after. In one case a positive culture was obtained one day before a fresh crop. Too much stress, therefore, must not be laid on negative results. Retinal hæmorrhages were found in three cases, and seem to forebode an early dissolution.

Perisplenic friction was found but once. Enlargement of the spleen may of course be due to the old valvular lesion. The urine contained blood corpuscles at various times in five cases. Cerebral embolism occurred in two cases, aneurysm of the ulnar artery in one. These aneurysms, however, need not be bacterial, as shown by Libman in a case of embolism from calcareous vegetations.

The writer lays stress on enlargement of the lymph glands which was found in three cases. It does not as a rule appear to be associated with leucocytosis.

Authors are agreed that both auscultatory and percussion evidence of cardiac disease may be absent. Even gradual evolution of a murmur is not conclusive, for in another case of cryptogenitic streptococcæmia such a murmur proved at autopsy to have been entirely hæmic.

As regards treatment the writer has no results to record. He believes that salicylates are worthy a trial as at the beginning differentiation from benign endocarditis may be uncertain. Quinine was used in one case, but too late to constitute a fair trial; this drug ought to be given a more extended trial. Sera have so far been disappointing. Inunction with Ung. Crédé and intravenous injection of silver nitrate were also tried. Intravenous injection of formalin has been suggested, but was found by Park to be dangerous in the case of rabbits with septicæmia.

G. R. Mill.

Surgery.

Aspiration Drainage in the Treatment of Empyema.

Schley (W. S.). *Amer. Journ. of Med. Sci.*, 1908.

In many cases of empyema the ordinary methods of drainage are inadequate. With a lung compressed for a long time by purulent exudate the adhesions are so dense that some of them never expand again under simple drainage. Such a lung requires in addition the establishment of a decided negative pressure. Though chiefly indicated in the older cases and in persisting cavities and sinuses, the method has answered so well in simple cases that the writer has adopted it as a routine procedure. The method was described by Bryant in his article in Jacobi's Festschrift, and has the advantage over methods previously devised of being at once fully ambulatory and perfect as regards drainage. The amount of negative pressure required to overcome contraction of the lung itself is slight, from one eightieth to one hundredth of an atmosphere (Wintrich, Donders). A Politzer bag is all that is required. The writer believes that in addition to direct expansion of the lung there is a certain amount of Bier's passive hyperæmia, causing a more rapid alteration in the character of the exudate.

It is best to wait for several days after operation (resection of rib). A single tube of 35 to 40 French is then inserted $2\frac{1}{2}$ to 3 inches within the pleura and packed round with iodoform gauze. A piece of dentist's rubber dam 4 inches square with a small hole cut in it is stretched over the tube, run down to the side of the chest, and overlapped with strips of adhesive plaster. A circular pad of wool is placed about the tube and a binder applied with the tube coming through. A Politzer bag is then attached by a glass connection and smaller tubing. The bag is easily held under the clothing and can be emptied and replaced by the patient. The dressing may be changed every week and the expansion of the lung and vertical depth of the cavity or sinus noted. The tube is shortened as required and gradually removed.

In one case (æt. 15) of three years' standing with a large imperfectly drained cavity communicating with a bronchus, the lung was made to re-expand and fill its side of the chest.

G. R. Mill.

Hypertrophic Stenosis of the Pylorus in Infants.

DUFOUR (H.) and FREDET (P.). *Revue de Chirurgie,* February, 1908.

THE authors report a successful case of submucous pyloroplasty in an infant of two months. They recognise three varieties of pyloric disease in infants:—(1) Atresia, a rare congenital malformation inevitably fatal within a short time. (2) Spasm without pyloric tumour, a common condition amenable to medical treatment. (3) Hypertrophic stenosis with a pyloric tumour, a rare affection, uncurable by medical means but often cured by operation.

The classification is complicated by the occurrence of cases of real stenosis with spasm, in which the diagnosis is obscure and the indications for surgical intervention uncertain.

In a typical case of hypertrophic stenosis, the child, normal at birth, continues to develop and increase in weight till about the third week, when there develops the classical sign, viz., repeated vomiting together with such signs as naturally result from insufficient food. Bloch, of Copenhagen, states that it is usual to see the vomiting develop along a definite line, being at first small, infrequent, and becoming later more copious and less frequent. The later stage is accompanied by much wasting, evident dilatation of the stomach, and visible peristalsis. The vomits, which are "explosive" in character, contain neither bile nor blood. The pyloric tumour is not to be felt in all cases; it is in fact usually absent in the early stage of the disease but usually appears later and is felt most easily in those cases in which the wasting is advanced.

The authors describe in full the naked-eye anatomy and histological structure, with illustrations, of several typical cases. The point on which they lay stress, in view of operative treatment, is the plication and redundancy of the mucous coat of the pylorus. They advise a preliminary trial of medical measures if the child is in good condition, but, if such measures show no improvement in the weight of the child, they advise early operation before the wasting of the child has diminished the chance of success. The operative measures available are (1) gastro-enterostomy, (2) divulsion, (3) pyloroplasty.

Gastro-enterostomy, which should be done by the posterior method, is not the operation of choice, but is to be done of necessity where pyloroplasty is not feasible.

Divulsion of the pylorus they condemn utterly.

Pyloroplasty is the operation of choice and is carried out as a submucous section without opening the stomach. The tense, almost cartilaginous ring of muscle is divided cautiously in the long axis of the pylorus until the mucous layer is reached. The muscular coat is then separated for a short distance from the mucous lining on each side of the incision. Having in this

way "mobilised" the parts, the horizontal incision is now sutured in such a way that the resulting line is vertical. If a sufficient result is not obtained by one incision the authors recommend a second one lower down, but recognise that such second attempt is by no means easy to carry out. The redundant mucosa will readily stretch itself and does not require section.

The article should be consulted by any surgeon interested in this subject as it contains a very elaborate analysis of all reported cases as far as they are known. The total number of cases submitted to operation by all methods is no less than 135 and the percentage mortality is estimated at 48·8.

E. D. Telford.

McBurney's Point.

Lanz (Prof.). *Zentralblatt für Chirurgie,* February 15, 1908. From a series of experiments on the cadaver Lanz concludes:

1. The position of the appendix, as far as its point of attachment to the cæcum is concerned, is much more constant than is generally supposed.

2. McBurney's point has nothing whatever to do with the position of the appendix.

3. McBurney's point corresponds to a point on the inner side of the ascending colon, distant 4–5 cm. above the attachment of the appendix.

4. The point of attachment of the appendix is indicated exactly on the surface by the point of junction between the right and middle thirds of a line drawn between the anterior superior iliac spines.

E. D. Telford.

Mucocele of the Accessory Nasal Sinuses.

Turner (A. Logan). *Edin. Medical Journal,* November, 1907. In a long and exhaustive paper the author reviews the pathological and clinical features of this condition, describing in detail ten cases occurring in his own practice and mentioning the special points of other recorded cases.

An orbital swelling is the first thing which draws the patient's attention to his condition, and so the ophthalmologist is usually consulted before the rhinologist. Slow progress of the disease, absence of pain and tenderness, and of alteration in the orbital skin are characteristic, although pain, tenderness and œdema manifest themselves in some few cases. The orbital swelling occupies the internal and upper part of the orbital cavity, usually just under the middle and inner thirds of the supra-orbital margin in frontal sinus mucocele, just immediately above the inner canthus in ethmoidal cases; on palpation a soft, elastic or semi-fluctuating swelling is felt, often with a distinct bony edge

at its margin. Some displacement of the eyeball is usually present, and generally in a direction forwards, downwards and outwards. The forward displacement or proptosis is a characteristic feature, and is due to the fact that the affected sinus extends backward along the roof of the orbit so that when the mucous contents escape the eyeball is projected forwards. Even an ethmoidal mucocele may cause proptosis. Diplopia occurs, but is not so frequent as might be expected considering the displacement; the fundus does not as a rule show any pathological change. Epiphora is frequently an early symptom. An examination of the nose should be made in all cases although the patient has seldom noticed anything abnormal, except in some cases a mucous discharge. In four of the author's cases there was a distinct bulging of the outer wall of the middle meatus into the nasal cavity. In some of the recorded cases pressure on the orbital swelling has been followed by the escape of mucoid secretion into the nose. It is probable that owing to catarrh of the mucous membrane the ostium of the sinus becomes blocked, this leading to an accumulation of mucus with gradual thinning and absorption of the bony walls. Although the disease has been met with late in life, it usually occurs in adolescence. Of the seven cases of frontal mucocele, absorption of part or the whole of the inferior wall had taken place in six, in two of them the cerebral surface was also eroded, but in none the anterior wall. In the three cases of ethmoidal mucocele the lamina papyracea was more or less destroyed. The fluid contents are usually thick and gelatinous, but occasionally are thin and serous-like resembling cerebro-spinal fluid.

The author advocates the establishment of a free communication between the sinus and nose, to effect which an external operation is necessary in most cases; in ethmoidal cases, however, intra-nasal measures may bring about a cure.

LINDLEY SEWELL.

The Ætiology of Coxa Vara.

WEBER (F.). *St. Petersburg med. Woch.*, December 28th, 1907.

IT is believed by some writers that the body weight alone can cause bending of the femoral neck in young rapidly growing patients quite apart from the existence of any diseased condition in the bone. Weber disputes the possibility of such an occurrence. In the coxa vara of adolescents the cause of the bending is to be found in a weakening of the bone from diseases of various kinds.

The clinical and microscopical appearances of osteomalacia have been found in some cases. Many cases owe their origin to injury. Cases in which immediate gross damage is inflicted on the bone should be excluded, but there remain many cases

in which it appears that the weakness consequent on a severe epiphyseal strain has determined the yielding of the bone by gradual stages over a considerable period.

The importance of rickets as a cause of coxa vara is well known. The disease acts by directly weakening the bone at the epiphyseal line. In any case presenting the skeletal changes of rickets in a marked degree coxa vara will be found and like other rachitic lesions it is capable of much spontaneous improvement.

Osteomyelitis of the upper end of the thigh bone would appear to exist in some cases. Such cases are chronic in character and show gradual osteoporotic changes. The fulminant lesions of acute osteomyelitis are not included under this heading.

The literature of the subject contains a case in which tuberculosis has acted as a cause of coxa vara. In these cases the tuberculous process has been well localised and has produced a definite area of absorption. Such cases are likely to be seen when patients with evidence of tuberculosis of the hip are allowed to carry weight too soon on the damaged limb. The consequent deformity will be rendered permanent by the formation of dense bone which marks the healing process.

The author concludes his paper with an account of the pathology of osteomalacia and attributes to this disease a prominent part in the causation of deformity at the upper end of the femur. E. D. Telford.

New Growths of the Testicle.

Nicholson (G. W.). *Guy's Hospital Reports.* Vol. lxi., p. 249.

Spherodial-celled carcinoma. This is in nearly every case an encephaloid cancer. It may be alveolar or non-alveolar. It is often mistaken for sarcoma. It may occur at a young age, and runs a clinically malignant course. Next to embryoma it is the commonest form of growth.

Sarcoma—usually, if not always, composed of round cells, occurs at an earlier age than carcinoma and is most malignant. It is, however, not so frequent as has been supposed. It may be bilateral.

Endothelioma—derived from the lining of the blood vessels and lymphatics. More usually occurs in young adults. Although more commonly benign it may in some cases prove to be of a high degree of malignancy.

Embryoma—the commonest of the new growths of the testicle. It may give rise to secondary deposits reproducing one or all of the original constituents of the tumour.

Certain of these tumours contain trophoblast which may assume a very malignant character. E. D. Telford.

Strain as a Causative Factor in Infective Arthritis.

ADAMS (JOHN D.). *Boston Medical and Surgical Journal,* December, 1907.

UNDER this heading the author discusses six cases of rheumatoid arthritis affecting the hands. The patients were all dressmakers, and in all the trouble commenced in the thimble finger, affecting the other digits later. The left hand became affected still later. In all the cases the patients were working under good hygienic conditions, but their work consisted in handling heavy cloth. The common causative factor in all the cases seems to have been strain.

The treatment adopted consisted in omitting meat from the diet and insisting on a larger quantity of liquid. Sodium benzoate was given to neutralise acidity and the local treatment consisted in baking the hands daily with electric light. All the cases did well, though one required operative interference for deformity.

GARNETT WRIGHT.

Modern Lithotrity.

GOWLEY (J. W. S.). *New York Medical Journal,* November 9, 1907, p. 861.

BEFORE undertaking any such operation the surgeon should attempt to find out the nature, age and size of the stone, and the patient's physical condition, especially with reference to his urethra, bladder and kidneys. The presence of a stricture is not necessarily a contraindication, although a narrow stricture in the perinæal region makes the crushing operation undesirable, and it is not the correct treatment of cases in which the bladder is thickened, contracted and so irritable that no proper preparation of the patient can be made.. There are three forms of lithotrity —(1) in multiple short sittings; (2) in one or two sittings, with extraction of the detritus by means of the spoon lithotrite; (3) in one prolonged sitting with aspiration of the detritus. In the first, most suitable for patients with moderately tolerant bladders, the stone is expelled spontaneously.

The author is not a supporter of the last method, and thinks that for large, hard stones it is less dangerous to remove them by the suprapubic or perinæal route. In the majority of cases a general anæsthetic is not necessary, injections intravesically of cocaine or of antipyrin by the rectum are sufficient. The preliminary treatment is important; an irritable bladder can often be quieted by a few doses of atropine.

The author quotes largely from a paper by Dr. George Post, which deals with 455 cases, 368 of which occurred between the ages of 1 and 16. The results tend to show that perinæal lithotomy is the operation for choice in little children.

LAWRENCE JONES.

Resection of the Liver.

ANSCHÜTZ (W.). *Arch. für klin. Chirurg.* Band lxxxiv., Heft 2, p. 334.

FIVE years ago the author published five examples of this operation, to which he now adds seven from his own experience, and eight more are supplied by Garré, making in all twenty. All the operations were intraperitoneal; the method should be of the simplest, and the introduction of foreign bodies for purposes of compression is not favoured. The cases include three hepatic tumours, one growth spreading from the stomach and three from the gall-bladder, one irreducible umbilical hernia, seven hydatid cysts and five examples of cholecystitis in which the gall-bladder had perforated into the liver or was so firmly adherent as to call for a partial removal of the latter.

There are two methods of controlling hæmorrhage; one, suitable for small areas of liver tissue, consists in ligating the larger vessels separately, and controlling further oozing by compressing sutures; the other, in more extensive operations, aims at securing the vessels by closely applied rows of suture before the liver tissue is cut. For single vessels silk is the suture for choice; for the intrahepatic ligature, strong catgut. The author uses a blunt-ended Déchamps needle for the latter.

The liver, in these operations, should always be rendered as mobile as possible by the division of the bands which hold it; division of the falciform ligament allows of very free rotation in a horizontal axis. No invariable rule can be given as to the incision; frequently it is primarily only intended for the purpose of exploration, but if extensive operation is intended it must be very free and planned to suit the requirements of each case. In some cases it may be necessary to resect the lower ribs or the ensiform process; this is devoid of danger to the pleura, for the latter does not come lower than the 7th intercostal space in the mammary line; and probably the 7th or even the 6th costal cartilage can be divided without any great danger to the pleura.

LAWRENCE JONES.

Report on 100 Appendix Operations.

SCHÖNWERTH (A.). *Muench. med. Wochenschr.*, 1907, No. 42.

THESE were performed between the middle of 1903 and of 1907. The subjects with a few exceptions were healthy young people of average age 20.

Occasion of interference. Twenty-three were in the early stage (within 48 hours), 7 in the intermediate ($2\frac{1}{2}$ to 8 days from onset), 21 for abscess, 6 for peritonitis, 40 in the free interval, and 3 on a wrong diagnosis.

Season. November brought 11 cases, March 8, and the other months on an average 3·8. Interval operations and cases wrongly diagnosed are not included.

Previous attacks. One or more in 35 cases. There was a suggestion of heredity in 3 cases only.

Causation. Errors of diet and chill were frequently put forward, but trauma in 1 case only.

Early operations. All recovered except one, and without complications. The single death was from heart failure. As regards symptoms observed in the early stage, rigors occurred in 2 cases of advanced gangrene. Pyrexia was always present, with one exception. Disharmony of pulse and temperature was noted 11 times, in 6 of which perforation or gangrene were found, and in 3 ulceration. He regards this sign as an indication of severity. Tenderness was present in the cæcal region in all cases, and several times even on the left side in the absence of extension of inflammation in that direction. Scaphoid retraction of the abdomen was noted in one case in which the process was well localised. Rectal examination was negative except for frequent tenderness on the right side. As regards changes in the appendix, perforation was found 5 times, gangrene 8, ulceration 5, slight changes 5, concretions 8. The time limit for early operation he makes 48 hours.

Intermediate stage. Seven cases with one death from pneumonia. The indications for interference in this stage are continuation of fever and obvious swelling. In 3 the appendix was glued up with the omentum, and separation in each case revealed a few drops of thick pus. The advisability of operating in this stage must be decided on the merits of the case.

Abscess. Twenty-one cases. Fever was never absent. Disharmony of pulse and temperature observed 8 times. There were 2 deaths; in 1 paralytic ileus was relieved by enterotomy on the fourth day, but death occurred two months later from chronic fibrinous peritonitis and exhaustion; in the other a large collection of pus was not opened till the fourteenth day, and death occurred from diffuse peritonitis. The appendix was removed only when lying free or easily reached. Otherwise it was left till the abscess healed and removed in the interval, on an average five weeks later. In all cases the pus was well shut off. Concretions eight times. Complications occurred seven times in 5 cases, right serous pleurisy in 2, right empyema in 1, abscess in Douglas's pouch in 1, peritonitis in 2, ileus in 1. By contrast, in 23 appendicectomies in the early stage there was only one complication.

Peritonitis. Six cases with three deaths. In 2 (both fatal) there was much sero-pus with numerous adhesions, which made it impossible to find the appendix. In the remaining 4 (one death) adhesions were absent. Perforation present in 2, gangrene in 2. All were done within 24 hours. Dynamic ileus in one case, the day after operation, was cured by atropin injections.

Interval operations. Of the forty, 11 were after previous operation for abscess. Difficulty was encountered in one case only, owing to dense adhesions. Of the remaining 29 cases, 4 had had no definite attack, but had suffered for years from indefinite pain in the cæcal region. The writer believes that many so-called first attacks are nothing but exacerbations of a latent process. There was one death from peritonitis of doubtful causation. It might have been due to bursting of a minute abscess which had been overlooked. There may thus be danger in operating through a too small incision.

Cases wrongly diagnosed. One case of peritoneal tuberculosis with ileo-cæcal abscess died two months later from exhaustion. A case of hysteria was not benefited by removal of the appendix. The third was a commencing pneumonia presenting all the signs of acute appendicitis, and recovered in spite of the interference. G. R. Mill.

The Surgical Treatment of severe habitual Constipation.

Doberauer (G.). *Prager med. Wochenschr.*, 1907, No. 36.

This lengthy article is based upon a case occurring in Wölfler's clinic to which the latter alluded in his communication on Volvulus of Sigmoid Flexure in February, 1906. This case was operated upon by the writer, and is here recorded in detail.

The patient, a woman of 26, underwent in all four operations. The first interference was for acute obstruction due to fæcal accumulation. The sigmoid was enormously distended, abnormally long and mobile, full of pulpy fæcal masses and showed gangrenous areas just short of perforation. Peritonitis was present. Near the sacral promontory the distended coil passed by a sharp angle into the rectum, and at this point was a large fæcal tumour, the size of a fist. This was removed by incision of the coil, and weighed 350 grammes. An artificial anus was created, and the patient made a good recovery. Fæcal accumulation, however, recurred and was so intractable as to require a second laparotomy after three months. An anastomosis (lateral) was made between the dependent transverse colon and the sigmoid beyond the fistula, and the latter closed. All went well for three weeks, when scybala began to re-form in the flexure, and a week later the abdomen had to be re-opened. The transverse colon was cut across beyond the anastomosis and the ends sutured up. The laparotomy wound was closed and the whole sigmoid flexure resected through a fresh incision. A fæcal fistula resulted with prolapse of the mucous membrane, but the bowels acted well per anum. From the fistula came some mucus and also small masses of greyish-green colour, and without fæcal odour—evidently inspissated secretion. Nine months later the patient returned to have the fistula closed. She is now (September, 1907) quite well.

The writer cites a number of published cases as showing that ileus may result from fæcal accumulation *per se*. He points out that injections may be dangerous owing to a gangrenous state of the bowel wall, and if employed for diagnostic purposes one should be prepared to do laparotomy in case of accident. The indications for operation in these cases are less urgent than in strangulation, but much time should not be lost. The greatest danger in fæcal obstruction is peritonitis from local necrosis of the bowel.

He discusses at length the condition of kinking or angulation beyond the distended loop. This he believes to be the result of overfilling of the sigmoid and not a primary abnormality.

As regards the causation of severe chronic constipation, retroflexion, adhesions, etc., play only a subsidiary rôle, and the cause must be looked for in the bowel itself. Traube's innervation theory is cited, and in the writer's case the essential condition seems to have been a local atony.

Special reference is made to two anomalies of surgical importance:—(1) Abnormal length of the whole colon or of certain parts. This, when in association with constipation and great fæcal accumulation, is known as Hirschsprung's disease. In some cases at least the constipation precedes the anatomical changes. (2) Actual mechanical impediment, *e.g.*, the adhesion stenosis of Payer, increased acuteness of the flexure, etc. The primary condition is probably a coprostasis which initiates a vicious circle of anatomical changes.

Treatment. Rational treatment must have regard to the etiology and have for aim the restoration to the whole colon or to its affected part of a normal peristalsis. Massage and faradisation are very useful. Ebstein recommends systematic use of oil enemata. Purgatives and enemata may relieve an attack of obstruction, but cannot prevent its recurrence. Chronic constipation may call for surgical treatment apart from obstruction or perforation.

Colotomy with establishment of artificial anus should only be considered when more radical procedures are impossible owing to the general state. Resection is the most radical, and has the advantage over short-circuiting procedures that no inactive or occluded portions of bowel are left as possible sources of subsequent trouble. Total resection of the colon is technically possible, and has been done by Korte for tuberculosis. Of short-circuiting operations the simplest, of course, is entero-anastomosis. In general constipation, without preponderating affection of any segment, ileosigmoidostomy is the most certain. The exclusion of the greater part of the colon has no bad effects upon nutrition, and the method has, further, the advantage of greater technical certainty and simplicity. Franke has found it more satisfactory actually to implant the ileum into the sigmoid,

thus completely diverting the intestinal contents. Entero-colostomy is simpler than colocolostomy, but if, as is most frequent, the sigmoid only is involved, the latter should be chosen, since it is advisable to do as little as possible.

When one is not called upon to operate in the stage of acute obstruction and there is time to clear out and prepare the bowel by irrigation, the danger of the operation is slight. In the state of obstruction it is not advisable to do more than make an artificial anus, leaving the more radical procedure to a later date. Operation is always facilitated by the length of the flexure and the dependent state of the transverse colon, so that tension on the suture is scarcely to be feared.

When the cause of the constipation is not sluggishness of the bowel, but kinking or angulation in the sense of Braun and Payer, it will suffice to do a lateral anastomosis, at the same time freeing adhesions, fixing the transverse colon, etc., as the case requires.

G. R. Mill.

Skin-grafting by a Modification of the Wolfe-Krause Method.

Young (Archibald). *Glasgow Medical Journal,* October, 1907.

This author describes a method of grafting the whole thickness of the skin, modified from that of Wolfe and Krause. The grafts are taken from the thigh or arm in the form of a long ellipse, skin and fat being rapidly removed down to the muscle aponeurosis. The graft is placed in warm saline solution and the raw surface left is sutured and dressed. The surface to be grafted is then prepared. If a granulating surface it must have been previously got into a healthy, clean condition, and at the time of operation it is merely washed with warm saline solution. The granulations are not removed. The fat is then cut away from the grafts by means of curved scissors, and the graft is cut into small pieces and placed at intervals on the prepared surface. No attempt is made to suture them in position. The dressing consists of " protective gauze tissue " covered with a moist dressing of sterile gauze. The outer dressing should be changed daily, but the " protective gauze tissue " is left undisturbed for several days. The chief modifications are the removal of the subcutaneous fat which enables the graft to be rapidly removed, and the application of the grafts to uninjured granulations, with the employment of a special protective gauze and moist, frequently changed dressings. The author claims that this method is more certain than Thiersch grafting, and denies that it is followed by any considerable contraction. The paper contains accounts of cases, including one in whom the grafts took and grew, although the patient was moribund.

Garnett Wright.

The Making of a Shelf below the unduly mobile Kidney.

THOMPSON (ALEXIS). *Edinburgh Medical Journal*, 1907.

THE author commences with a discussion on the causation of undue mobility of the kidney, laying stress on the variety of opinions and theories. He discusses the influence of pregnancy and tight-lacing and the effect of increased abdominal pressure. The frequency of the condition on the right side is explained by the large right lobe of the liver and the different relations of the hepatic and splenic flexures of the colon to the kidney.

The principle of the operation consists in suturing together the anterior and posterior walls of the space of Gerota below the kidney. This space is enclosed in the strong fascia derived from the fascia transversalis, which encloses the kidney and the perinephritic fat. The operation is performed through an incision downwards and forwards from the tip of the last rib, the muscles being separated in the gridiron fashion. The space of Gerota is opened from behind, then the anterior layer of the fascia together with the peritoneum is sutured to the posterior layer of the perirenal fascia below the kidney. In this way a shelf is formed below the kidney. The results are said to be good, Harris of Chicago having cases that have gone two years without recurrence. The author's cases were examined nine months after operation and were in good position.

GARNETT WRIGHT.

Observations on the Blood Changes subsequent to Excision of the Spleen for Traumatic Rupture.

MATTHEW (EDWIN) and MILES (ALEXANDER). *Edinburgh Med. Journal*, 1907.

THESE authors describe a case of traumatic rupture of the spleen in which the chief clinical features were that the patient was an alcoholic and the spleen ruptured from very slight violence and that the symptoms were delayed probably owing to the rupture being at first sub-capsular with secondary rupture of the capsule. The spleen was successfully excised and the blood changes observed over a period of two years and three months, with the following results.

There was an immediate polynuclear leucocytosis lasting about 8 days, with a maximum of 24,000 per cm. Later the polynuclears were at the lower boundary of the normal limit. A relative and absolute increase of the lymphocytes was established in about 12 days and the percentage of lymphocytes remained about double the normal. Eosinophile cells were absent at first and there was subsequently slight eosinophilia. The blood-plates were enormously increased.

The red cells at first diminished to 3,000,000, but subsequently

regained the normal, though the hæmoglobin was only 80 per cent, representing some degree of chlorotic anæmia. The general condition of the patient was good, in spite of his drinking habits.

GARNETT WRIGHT.

Operative Injuries of the Thoracic Duct in the Neck.

STUART (W. J.). *Edin. Med. Journal*, 1907.

IN this paper the author describes a case of operative injury of the thoracic duct in the neck and analyses the reports of 40 cases that he has been able to collect from the literature.

His own case occurred during the dissection of malignant glands in the root of the neck, secondary to mammary carcinoma. The injury was not recognised until the second day after the operation when chylorrhœa set in. Under treatment by supraclavicular pressure the discharge ceased in 15 days and the wound was healed in a month.

An analysis of the 40 cases shows that the vast majority of cases occurred during the dissection of malignant or tuberculous glands. There were 35 recoveries and five deaths. Of the five deaths, one was due to shock, two to sepsis, one in a man of 70 to weakness on the 13th day. The cause of the fifth was not stated. The best results have been obtained when the accident has been recognised at the operation and the duct has been ligatured or a lateral suture employed. Packing does not seem an efficacious method of treatment, and supraclavicular pressure by means of a pad and bandage is recommended when chylorrhœa is the first indication of the injury. Forcipressure has also been employed successfully either as a primary or a secondary measure.

The low mortality, which is against older views, is due to the following anatomical facts. (1) The thoracic duct frequently ends in several channels, arranged in a delta-like manner. (2) There are frequently anastomising communications between the thoracic duct and the azygos veins in the thorax. These facts explain that wasting is not a prominent feature in these cases, is sometimes absent altogether and always ceases when the chylorrhœa stops.

GARNETT WRIGHT.

Pathology.

Chloroma and Acute Lymphatic Leukæmia.

TREADGOLD (C. H.). *Quarterly Journ. of Medicine*, April, 1908.

THIS very long and excellent paper gives an account of two cases of chloroma and two of acute lymphatic leukæmia, and discusses the pathology of the diseases. The four cases presented some interesting points of similarity and difference.

Summary of a few interesting pathological points of similarity and difference in these four cases.

1. All cases showed small multiple hæmorrhages in the various organs.

2. In the three cases in which the marrow was examined, it was increased in amount. The colour varied. It was either grey, pink, or red, the depth of colour depending on (*a*) the amount of blood in the marrow capillaries, but chiefly on (*b*) the amount of hæmorrhage into the marrow substance. The marrow showed marked alterations in the three cases in which it was examined. In the two leucocythæmia cases practically all the white cells were non-granular mononuclear cells, larger than a red blood cell. In one chloroma case there was a fair proportion of graulated cells, although in most cases the granules were exceedingly minute. In both cases of chloroma the cells were larger and possessed more protoplasm, both in the blood and in the tissues, and there were indications of the presence of atypical myelocytes in both. Large mononuclear cells with reniform nuclei and a large quantity of hyaline protoplasm opposite the dent in the nucleus, were a feature in both. These cells were extremely rare in one of the leucocythæmia cases, while a few were seen in the blood and marrow of the other. It is to be noted that somewhat similar cells are described in normal marrow.

3. The spleen and liver were somewhat enlarged in all four cases; also the liver was markedly affected, and this was especially noticeable in the chloroma patients. Glisson's capsule was infiltrated and there was also vascular degeneration. Speaking generally, vascular degeneration was more marked in these two cases, and many of the small blood-vessels were infiltrated by mononuclear cells.

4. The glands were hardly enlarged at all in the leucocythæmia cases; they were definitely enlarged and many were green

in the chloroma patients. In these two latter cases the trabeculæ and pericapsular fat were infiltrated by mononuclear cells.

5. Endothelioid proliferation as a rule was not marked in the affected tissues with the exception of one chloroma case. Here, endothelial proliferation was very marked in the cervical glands and also in the buccal and pharyngeal lymphoid tissue. This endothelial proliferation was nothing like so well marked in the other glands examined. The mouth was very septic some days before death and the tonsils were ulcerated. Smears from the latter showed countless diplococci though no organisms were noticed in the sections. This multiplication of endothelial cells was evidently due to the toxins produced by the cocci.

6. The thymus was present in three cases out of four.

Organisms were carefully looked for in the blood and tissues of all four cases, but none were seen. No culture media were inoculated. The hæmoglobin index was not recorded. If the percentage of hæmoglobin had been estimated, it would have been quite valueless, as present methods do not record the true index in these cases, the index varying 'pari passu' with the leucocytosis.

Degenerated cells were present in the blood of all four cases. Their numbers varied directly as the temperature.

Resemblances between chloroma and acute lymphatic leukæmia.

First of all, the two diseases agree as regards age and sex. In the last 16 cases of acute lymphatic leukæmia at the London Hospital, 11 were males and 5 were females. The average age was 21.5 years. In Dock's first series of 16 cases of chloroma (*i.e.*, cases reported up to 1893), 10 were males and 6 females. The average age was 18.8 years. In his second series of 23 cases (between 1893 and 1904), 19 were males and 4 females. The average age was 15.2 years. In a further series of 8 more recent cases (including the two present ones), 5 were males and 3 females. The average age was 18.8 years. This gives a grand total of 47 cases of chloroma, of which 33 were males and 14 females, while the average age was 17.6 years.

Both diseases usually appear before puberty and become progressively more rare with advancing age. The symptomatology in both conditions is very similar. The following symptoms and changes occur in both: Weakness, marked anæmia, hæmorrhagic tendency, splenic and glandular enlargement (usually slight); also metastases in the liver, kidneys, and less frequently in the lungs. In chloroma, secondary deposits commonly occur in the orbits, temporal regions, and other cranial bones; also in the prevertebral tissue, skin, and other organs where lymphoid tissue does not normally exist. However, non-chloromatous growth sometimes occurs in these situations in association with lymphatic leukæmia.

Histological comparison between chloroma and acute lymphatic leukæmia.

Looking at these diseases from the point of view of morbid histology, there are several differences between the two conditions.

These may be summarized as follows:—

1. In chloroma, infiltration of the walls of the small blood-vessels is more marked.

2. Metastases are more frequent.

3. The eroding power of the cells is greater, for bone and nerves may be infiltrated and destroyed in some cases, while the periglandular connective tissue of lymph nodes is usually infiltrated. These changes are far more limited in acute lymphatic leukæmia.

4. In chloroma the cells are on the whole larger and possess more protoplasm, both in the blood, the marrow, and the tissues.

Bearing these facts in mind it may be stated that increased pathological malignancy may be accounted for by the additional quantity of protoplasm in the morbific cells increasing their amœboid powers. Accordingly it may be stated that in acute lymphatic leukæmia hæmorrhages are usually necessary for the production of infiltrations, while in chloroma the cells in many cases seem to make their way through a degenerated vessel wall. In this connexion it must be noted that increased pathological malignancy does not mean a shorter clinical course; this seems to depend largely on the secondary anæmia. The average duration of a case of chloroma is longer than one of acute leukæmia. In most cases of chloroma the primary lesion is more focal. Accordingly anæmia develops more slowly, and the case is clinically less acute.

Neoplastic origin of the diseases.

To sum up, acute lymphatic leukæmia is a tumour of malignant nature, arising in the marrow of bones. The growth usually consists of amphoblasts, but leucoblastic and mixed types may occur.

Chloroma is chiefly a tumour of myeloblasts, and arises in the red marrow of bone. Perhaps in some cases all the undifferentiated marrow cells are affected, yet myeloblasts always form the majority. The condition lasts longer than acute leukæmia, owing to the marrow lesion remaining focal for a longer time, thus allowing these cells to form metastases before the marrow is generally affected.

That rare condition, acute myelogenous leukæmia, is of a similar nature. If the disease were more focal in origin and therefore clinically less acute, we should get chloroma. We thus have the apparent paradox of a tumour which is pathologically less malignant, but clinically more malignant.

Chronic myelogenous leukæmia is a tumour affecting myelocytes and to a far less extent the undifferentiated marrow cells which produce them.

Chronic lymphatic leukæmia also originates in the marrow. However, the glands and spleen cannot be positively excluded in every case. It is chiefly a disease of lymphocytes, but amphoblasts sometimes predominate in the sub-acute cases.

Pseudo-leukæmia is a disease affecting the lymphocytes of lymphatic glands.

Myelogenous lymphosarcoma occurs sometimes and is analogous to the cases described by Birk, Leber, Wende, and Miller. Possibly it occurs sometimes without co-existing leukæmia, the modes of egress becoming blocked, as is the case in glandular lymphosarcoma.

The present nomenclature of these diseases is confusing and does not indicate the true origin of the affected cells. Yet it is hard to suggest an undoubted improvement. Perhaps the following scheme will make the inter-relationships of these diseases clearer.

Lymphosarcoma—glandular, tonsillar, thymic, and myelogenous.

Leucoblastoma, amphoblastoma, mixed. (These correspond to acute lymphatic leukæmia.)

Lymphocytoma—myelogenous and glandular. (These correspond to chronic lymphatic leukæmia and pseudo-leukæmia respectively.)

Myeloblastoma. (This condition includes acute myelogenous leukæmia and chloroma.)

Myelocytoma (chronic myelogenous leukæmia.)

E. M. Brockbank.

The Separation of Cholesterin in the Bile and its Significance for the Pathogenesis of Gall Stones.

Bachmeister. *Münch. med. Wochenschr.*, February 4th, 11th, 18th, 1908.

According to Naunyn and his school cholesterin in the bile is not a specific secretion of the liver and is independent of general metabolism. Goodman, on the other hand, has shown that the amount of cholesterin is increased by a diet rich in proteids.

According to Naunyn the necessary precursor of cholelithiasis is stagnation of the bile with catarrhal inflammation of the bile passages. The cholesterin arises from the desquamated epithelial cells as fat-like drops which coalesce into clumps and undergo crystallisation. The inflammation of the passages is due to the entrance of Bacillus Coli. The calcium salts found in gall-stones are also derived from the desquamated mucous membrane. Other workers at the subject have come to the

conclusion that bacteria are not necessary for the formation of calculi.

According to Aschoff the pure cholesterin stones arise directly from the bile without inflammation of the bile passages. Ascoff is of opinion that the cholesterin in the bile is present as a cholestryl ester—fat mixture. This mixture is absorbed by the mucous membrane and the cholesterin is returned to the bile while the fat is passed to the lymphatics.

Kramer experimented *in vitro* and showed that cholesterin could be precipitated from mixtures of bile and broth by inoculating the tubes with B. Coli or B. Typhi Abd., and came to the conclusion that the constituents of the calculi arise from the bile under the influence of such bacteria as produce acid.

The author of the present paper, from a bacteriological examination of gall-stones, had come to the conclusion that different kinds of calculi owe their origin to different circumstances. He then carried out an extended series of observations in test tubes. A mixture of bile and broth was used or, in some cases, bile alone, filtered or unfiltered. These tubes after sterilisation were inoculated with various organisms and, in many cases, cholesterin was precipitated sometimes in the form of a concretion or a minute stone. The separation of the cholesterin was not confined to the inoculated tubes but also occurred in the control tubes.

The cholesterin separated first as refractile fat-like globules which became crystalline or coalesced into clumps which subsequently crystallised. The crystals were sometimes the typical rhombic plates, sometimes rosettes of prisms, and sometimes bundles of very minute needles. The latter form was not permanent but eventually became transformed into plates.

The author comes to the conclusion that the cholesterin in gall-stones is derived from the bile itself and not from the epithelium of the gall-bladder and that the separation of the cholesterin is facilitated by the presence of protoplasmic substances—either epithelial cells from the mucous membrane, or bacteria. The action of the epithelial cells or bacteria is probably a fermentative action.

The pure cholesterin stones are thus derived from the stagnant bile and are independent of inflammatory changes. The mixed stones arise in gall-bladders which are the seat of cholecystitis the calcium salts being derived from the inflamed mucous membrane.

CHARLES POWELL WHITE.

Reviews.

"The Bacteriological Examination of Water Supplies." By William G. Savage, M.D., B.Sc., D.P.H. London: H. K. Lewis. Price 6s. 6d. net.

Dr. Savage recognises the difficulty of writing dogmatically on the bacteriology of water supplies, but since observations on the subject are rapidly accumulating it is important that a connected statement should be made for the guidance of those who are responsible for public health administration.

The author is to be commended for the way in which he has compressed into small space an immense amount of information and this he has done without obscuring his argument.

The book begins with a chapter on the conditions of bacterial growth in water. The discussion of this question might have been a little fuller. The natural self-purification of rivers and stored waters in lakes and reservoirs is of great practical imporaance. A fuller treatment should include a description of the forms of protozoal life which live on bacteria. The absence of this is a deficiency in the book and the reader must fail to carry away any definite idea of the meaning of "sedimentation" to which so much influence in the purification of water is ascribed. It is not enough to describe the process as merely a sinking of bacteria and particles by gravitation to the bottom of the water. A river may purify itself more rapidly than a reservoir in which water has been stored. Water suitable for storage must be carefully selected if we must maintain a supply up to the highest standard. The explanation of these facts by mechanical sedimentation leaves much to be desired.

In discussing the bacteriology of various kinds of contamination the author quotes freely from Dr. Houston's writings. The analysis of excreta and sewage for characteristic bacteria and for specific pathogenic contamination is clearly set forth. The capacity of the soil to act as a reservoir of bacteria and the behaviour of pathogenic organisms especially of the typhoid bacillus are fully discussed. Here the author very properly notes that it has never been definitely ascertained how long the typhoid bacillus can remain alive in excreta. This is no doubt a most important point in the problem of typhoid infection in relation to surface pollution.

The later chapters of the book deal with the characters of the various bacteria. The "essential but sufficient" tests by which we can recognise a typical bacillus coli communis are tabulated: the significance of coli-like forms is explained: the typhoid bacillus is similarly described in detail and a critical review of the published observations on the occurrence of the

typhoid bacillus in soil and water is added. Then follows a chapter devoted to a description of streptococci, bacillus enteritidis sporogenes and the vibrios.

These groups of bacteria are separately considered as indications of pollution and in relation to each group the author lays down the standard of purity which may be applied in interpreting the results by water analysis in any given case.

In Part II. we find a description of the rules and methods to be adopted in the bacteriological examination of a sample of water.

This book is accurate and up to date and has throughout the great merit of giving full references to the work that has been done and at the same time indicating the necessity for further investigations on many points.

It is becoming increasingly difficult in this country to find good sources of public water supply and it is clear that science will be more and more called upon to define the conditions of natural and artificial purification. This volume in presenting the information available at the present day in compact form serves many useful purposes.

"An Essay upon Disease: Its Cause and Prevention." By G. E. Richmond, M.D. (Lond.). London: H. K. Lewis. Price 2s. net.

The author rather cuts the ground from under our feet by saying in his preface that the essay was written rather hurriedly and that space had not permitted him to give the precise details upon which his opinions are based and hence some of his conclusions may appear to be made upon insufficient data. We should like to know upon what scientific facts he bases the opinion that appendicitis, rheumatism, nasal discharge, deafness, and asthma are due to articles of diet. We presume his train of argument must have been similar to that displayed in the following passage which we quote from page 73:—"There are some (*dietetic*) substances which cause a great irritation of the sexual organs in children, with a bloody discharge from the vagina. . . . There is little doubt that many of these substances act very powerfully upon the ovaries, and in excess tend to produce ovaritis with all its attendant pain, and other disturbances of health, and if persisted in may produce ovaritis or ovarian tumour; for ovarian tumour, like all other diseases, must have some cause, and ovarian tumour is mentioned in the Bible as being caused by drinking dirty water." We could quote numerous other passages of similar character but think this is a sufficiently good example of the style of this remarkable essay, which is the most extraordinary production we have ever met with.

"A System of Medicine." Vol. iii. Edited by WILLIAM OSLER, M.D., F.R.S., and THOS. MCCRAE, M.D., F.R.C.P. (Lond.). London: Henry Frowde, Oxford University Press, 1908. Price 24s. net (30s. to non-subscribers).

OF the third volume in this well-known System of Medicine, a little more than one-half is devoted to the Infectious Diseases, the consideration of these diseases being continued from the second volume; the remainder of the volume is taken up by diseases of the respiratory tract.

The standard attained by the preceding volumes is, if anything, more than maintained. Without exception the account of each disease is set forth, not only in the greatest detail, but also in a thoroughly practical manner, and with conspicuous clearness and conciseness in expression.

There can be no doubt that the work represents in the fullest degree our collective knowledge, and experience of the diseases dealt with, and the writers of the various chapters have evidently been largely selected on account of their personal, and, in many cases, extensive contributions to the subjects treated.

The articles on Gonococcus Infections by Dr. Rufus I. Cole, on Tuberculosis by Drs. Baldwin, MacCallum and Lawrason Brown, and on Syphilis by Drs. Osler and Churchman are deserving of special mention. The chapter on Hay Fever by Dr. Dunbar treats this disease in a totally new light, in accordance with the advances made in our knowledge concerning it during recent years. The mechanics of respiration are very fully dealt with by Dr. T. R. Brown, and the same may be said of the chapter on Diseases of the Bronchi by Dr. McPhedran.

As a work of reference for the practitioner the volume cannot but be of the greatest benefit. The striking deficiency in this, as in preceding volumes, is the scanty bibliography in a work of such dimensions. It is, however, probable that none but the original investigator will regret the omission.

"The History of the Study of Medicine in the British Isles." The Fitz-Patrick Lectures for 1905–6 delivered before the Royal College of Physicians of London. By NORMAN MOORE, M.D. (Cantab.), F.R.C.P. Oxford: At the Clarendon Press, 1908. Price 10s. 6d. net.

THE first of these lectures treats of medical study in London during the Middle Ages, the second of the general attainments of physicians from the date of the foundation of the Royal College of Physicians in 1518 to the beginning of the eighteenth century, and in the third and fourth lectures is shown how that part of medicine which consists in the precise observation of patients grew up in the British Isles.

In the first pages of the book we have a most interesting account of the physicians in England in the years beginning about the end of the twelfth century, and on page 16 Dr. Moore has drawn up a sort of Medical Register of the time of King Henry III., in which eight names, taken from the writings of Matthew of Paris, are recorded. Many of the men who practised medicine then were ecclesiastics, and of this kind was the Abbot of Crokestone, who attended King John on his death-bed in 1216 at Newark. From the account left of the illness, it is probable that it was acute pneumonia or an acute gastro-enteritis that the King died of, for he began with severe rigors, and died within a week. The King's chances of recovery, whatever the illness really was, were probably not improved by a large meal which he ate and much new beer which he drank after he had had severe initial rigors. The abbot made a post-mortem examination, but left no record of his findings.

There is a very interesting account of John Mirfeld, a resident in the convent of St. Bartholomew in Smithfield, who practised medicine, and who wrote a treatise on it, entitled *Breviarium Bartholomei*, from which can be ascertained a good deal of information on the mode of education, and on the methods of physicians of the fourteenth century.

In the second lecture there are notes on the lives and work of many of the men who were associated with the early days of the Royal College of Physicians, from its founder Linacre onwards, and the author has described more fully the studies and attainments of Dr. Edward Browne, who was admitted a Fellow in 1675, as an example of the course of education and learning of a physician of his time (1644—1708). Dr. Browne is a most interesting figure, not only because he was the son of Sir Thomas Browne, but also because of his own professional ability. He was specially interested in anatomy, both human and comparative, in fact the account which Dr. Moore gives us of him calls John Hunter very forcibly to one's mind.

Of the founders of the clinical study of medicine in England, Mayerne, Glisson, and Sydenham are, according to Dr. Moore, the most important. Mayerne may be said to have first definitely established in England the clinical study of medicine and the method of recording observations. He seems to have been most of all in personal relation to the patient, thoroughly investigating his mind and body: Glisson set the example of studying the relation of the symptoms to the anatomical appearances of disease, paying a good deal of attention to morbid anatomy; whilst Sydenham had always before him the object of arriving at general laws about the prevalence and the course and treatment of disease from clinical observation. Mayerne's "clinical" notes on James I. are most full and interesting, and show unmistakably that amongst other ailments His Majesty suffered markedly from portal congestion.

We regret that want of space forbids the gratification of our inclination to refer to more of the interesting contents of this most valuable contribution to medical history, but we hope that the little we have drawn attention to will encourage others to read the book thoroughly. In conclusion, we should like to say how much we appreciate the publishers' share in the production of the book. The type and paper are excellent, and equally commendable are the beautiful reproductions in facsimile of pages of many interesting manuscripts.

"A Chronology of Medical History." By James Young, M.D. Bristol: Edward Everard, 1908. Price 2s. 6d.

For any book of reference to be of value it must, above all, be accurate, and we must confess our disappointment to find that this essential feature is not a characteristic of what promised to be a most useful and highly interesting little work. On the very first pages we have evidence of looseness of statement when we are told that the Homeric name of the god of medicine was "Esculapius or Asclepius." The latter is correct, but the former, an Americanised version of the Latin name of the god, is quite out of place in a book of this type. In the same paragraph the two sons of Asclepius, who acted as combatant army-surgeons with the Greeks before Troy are referred to as Machaon and Polidarius. The younger son of Asclepius was known as Podalirius and not by the curious anagrammatic appellation which occurs three times in the same paragraph and again in the index. Among other errors in names that of spelling Falloppius with one p is, perhaps, venial, inasmuch as it is common to many writers, and does not hide the man's identity. But Latum for Cagniard-Latour, Schwaun for Schwann, Bailey for Baillie, and Stahl-George Ernest for Ernest George Stahl, etc., are inexcusable. Many errors in ordinary spelling appear. of which "the graved uterus," "the Hunterian Ovation," "Matura Medica," "*de humain corporis fabrica*," and "*pharmocopobists*" are the most glaring. Some loosely written sentences and numerous faults in punctuation add to the tale of errors of commission.

We cannot omit noticing some sins of omission, which are bound to attract attention, although the author only claims to provide an imperfect record of famous names and important events in medical history. To mention but a few omissions: there is no account of Servetus and his tragic end, the discovery of the pulmonary circulation being attributed to Columbus, none of Sir Thomas Browne, nor of the foundation of any one of the English Universities. In a book which gives the dates of the foundation of St. Andrews, Aberdeen, Glasgow, Edinburgh, Dublin, and many foreign Universities, the omission of any

reference to Oxford and Cambridge, not to mention the other English Universities of more mushroom growth, is an extraordinary oversight. Montpellier's famous and old school of medicine is also omitted.

The most useful part of the book is the chronology, so far as it goes, and this is apparently more accurate. The information concerning the men or events referred to is very uneven, and though much of it is good, even this could easily be made better. The book is printed in good readable type, and is very nicely bound. It has evidently been a labour of love, and we feel sorry that the author did not invite the assistance of some friend versed in medical history in the reading of the manuscript before it went to press and of a good proof-reader to supervise the printing.

"Forensic Medicine and Toxicology." By J. Dixon Mann, M.D., F.R.C.P. Fourth edition. London: Charles Griffin and Co., 1908. Price 21s.

This fourth edition of Dr. Dixon Mann's well-known work on Forensic Medicine and Toxicology contains new information in the sections on foods, synthetic drugs and substances produced in manufacturing processes which brings the book fully up-to-date and makes it a reliable source of reference on all poisons of practical import. Other sections of the book have been equally improved by the introduction of references to the most recent work on the subjects which they deal with. The work now consists of 709 pages, that is, 170 more than the first edition which was issued in 1895, and it is full of information which has been collected and sorted most judiciously. We need hardly say at this date, for it has been recognised for many years, that Dr. Dixon Mann is a thoroughly reliable authority in the subjects of his book, and any student who possesses a copy of it will find everything in it, put clearly and concisely, which he will need for his most exacting examinations. The book is also invaluable to the qualified man who needs sound guidance in the many difficult problems in which law and medicine are brought into close co-operation.

"First-Aid to the Injured and Sick." By F. J. Warwick, B.A., M.B. (Cantab.), M.R.C.S., and A. C. Tunstall, M.D., F.R.C.S. (Edin.). Fifth edition. Bristol: John Wright & Co. Price 1s. 6d. paper, 2s. 6d. cloth.

This manual is a most excellent work on First-Aid and the authors have recognized the weak points of many books on this subject and have confined themselves to the essentials which an ambulance student must know, at the same time adding enough

to make the book readable and to enable those for whom it is intended to take an intelligent interest in their work.

The first part of the book is devoted to anatomy and physiology illustrated by many clear and explanatory diagrams. This section explains very concisely the structure and functions of the various systems and organs and should prove of great value.

Part II. deals with bandaging, treatment of wounds, hæmorrhage, sprains, fractures, etc.

In a book of this nature the authors would have been better advised if they had restricted themselves to describing one method of performing artificial respiration, instead of five.

The treatment of poisoning is carefully and clearly described and here as elsewhere the authors impress on the reader, the necessity for sending for a medical man. The book contains an excellent chapter on transport of the sick and injured.

It is with much pleasure that we recommend this manual not only to ambulance students but also to those who may be called on to teach or lecture to ambulance students.

"The Medical Annual." 1908. Bristol: John Wright & Co. Price 8s. 6d. net.

The twenty-sixth volume of this valuable publication fully maintains the high standard attained by its predecessors. Compressed into a volume of convenient size we find a complete summary of all the important advances in medicine, surgery, and therapeutics for the past year. The various subjects are treated in alphabetical order and there is a very full index. Not only are the more important matters dealt with in considerable detail, but a bibliography is also added, so that reference can be made to original articles when desired. New methods of treatment are discussed very fully and a number of special articles have been written on such subjects as Bier's hypostatic treatment of inflammation, spinal anæsthesia, and the vaccine treatment of micro-organismal diseases. These articles are clearly and concisely written and will prove of great value to those wishing to use these special forms of treatment.

The book is profusely illustrated, and some of the plates such as those of photo-micrographs of the fæces, those illustrating Killian's direct method of examination of the larynx, trachea, and bronchi are of great value. We have no hesitation in stating that this work is one of the most valuable publications of the year and that it should find a place on the bookshelves of all medical men who wish to keep up with the most recent advances in the science and art which they practise.

295.

THE MEDICAL CHRONICLE.

A MONTHLY RECORD OF THE

Progress of Medical Science.

LECTURES ON THE PATHOLOGY OF CANCER.

By CHARLES POWELL WHITE, M.A., M.D., F.R.C.S.,
Pilkington Cancer Research Fellow, University of Manchester.

PART I. TUMOURS IN GENERAL.

DEFINITION.

To understand the pathology of Cancer it is necessary first to know what Cancer is, what its relationship is to other tumours, to other diseases, and to normal tissues.

By Cancer I understand any form of malignant disease. Some authors have attempted to limit the term to Carcinoma, but there is no reason for this, and it is more satisfactory to use the compact term Cancer as a synonym for the more cumbrous term Malignant disease.

The cancers are members of the group of disorders known as Tumours which are characterised especially by their progressive and independent growth, and the pathology of Cancer cannot be considered apart from the pathology of other tumours.

The definition and classification of tumours which I adopt is one which I brought forward in the Erasmus Wilson lectures which I delivered before the Royal College of Surgeons in 1902.[10]

A tumour is defined as *a mass of cells, tissues, or organs, resembling those normally present in the body, but arranged*

atypically, which grows at the expense of the organism without, at the same time, subserving any useful function therein.

There are two important points in this definition. First, the distinguishing character of a tumour is the fact that it is *atypical,* not in the structure, but in the arrangement of its component parts. This feature distinguishes a tumour from a condition such as hypertrophy. The second point is that a tumour grows at the expense of the organism, but does not subserve any useful function therein. This distinguishes a tumour from an inflammatory mass, which, however destructive it may appear, has a useful tendency and ceases to increase when the irritant which causes it is removed or neutralised.

The normal organism is composed of a number of *organs* of which the structure and arrangement are characteristic for the species but differ in different species.

An organ is composed of a combination of *tissues* of which the structure and arrangement are typical for the organ concerned but differ in different organs.

A tissue is composed of a number of *cells* with more or less intercellular substance, of which the structure and arrangement are typical for each tissue, but differ in different tissues.

If this typical arrangement fail at any point the result is a tumour of some kind.

Thus we may find *organs,* recognisable as such, arranged in an atypical manner as in a *dermoid cyst* in which we can recognise skin, teeth, glands, bones, etc., without any definite arrangement.

Also *fibrous tissue* with its blood-vessels, etc., is normally arranged to form a definite organ—a tendon or fascia. If, however, while retaining its typical characters as fibrous tissue, it is not arranged in a typical manner, but forms an irregular mass we have a tumour—a *fibroma.* Again *fibrous tissue cells* are normally arranged with a certain amount of intercellular substance to form a tissue—*fibrous tissue.* If, however, the cells multiply without forming the intercellular substance the result is a tumour—a *sarcoma.*

To take another example: *epithelium* is normally arranged in a definite manner together with connective-tissue, blood-vessels, etc., to form an organ, for example, a secreting gland. In an *adenoma*, however, the epithelium and connective-tissue, while themselves resembling normal tissues, are arranged irregularly and not so as to form a gland (Fig. 1). Again, normally *epithelial cells* are arranged in contact with one another forming a membrane which covers a surface or lines tubes and spaces. This membrane is an epithelium—a tissue. If, however, the epithelial cells are not arranged in the typical way but grow irregularly in the connective-tissue spaces not forming a definite membrane, we have a tumour—a *carcinoma* (Fig. 2).

Classification.

We have, then, the following classification of tumours.

In the first place we have tumours which are composed of more or less definite *organs* which are arranged atypically as in a dermoid. These are called Organ Tumours or Organomata.

In the next place we have tumours which are composed of *tissues* arranged atypically. These are called Tissue Tumours or Histiomata and include the non-malignant tumours.

Lastly we have tumours which are composed of *cells* arranged atypically. These are called Cell Tumours or Cytomata and include the cancers.

In this last group the characteristic feature is to be found in the growing portion of the tumour. Some carcinomata show well formed epithelium and closely resemble adenomata, and some sarcomata contain well formed fibrous tissue, cartilage, etc., but, if the growing part of the tumour be examined the distinction will be found to hold good, the definite tissues being of secondary formation whereas in the histiomata the definite tissues are present in the growing as in the older parts. I shall have more to say on this point when I consider the growth of tumours.

The classification is, then, as in the accompanying table.

CLASSIFICATION OF TUMOURS.

A. ORGANOMATA.	
	Teratoma. (Dermoid Cyst.
B. HISTIOMATA.	
(*a*) Connective tissue tumours.	DESMOMATA.
Fibrous tissue,	Fibroma.
Fat,	Lipoma.
Mucous tissue,	Myxoma.
Notochordal tissue,	Chordoma.
Cartilage,	Chondroma.
Bone,	Osteoma.
Neuroglia,	Glioma.
(*b*) Lymphoid tissue tumours.	LYMPHOMATA.
Lymphadenoid tissue,	Lymphadenoma. (Lymphoma.
Bone marrow,	Myeloma.
(*c*) Muscle tumours.	MYOMATA.
Smooth muscle,	Leiomyoma.
Striated muscle,	Rhabdomyoma.
(*d*) Nerve tissue tumours.	NEUROMATA.
Medullated Nerve tissue,	Myelinic Neuroma.
Nonmedullated nerve tissue,	Amyelinic Neuroma.
(*e*) Epithelial tissue tumours.	EPITHELIOMATA.
Squamous celled epithelium,	Squamous celled Adenoma.
	Squamous celled Papilloma.
Columnar celled epithelium,	Columnar celled Adenoma.
	Columnar celled Papilloma.
Spheroidal celled epithelium,	Spheriodal celled Adenoma.
	Angeioma.
Endothelium,	Endothelial Papilloma.
C. CYTOMATA.	
(*a*) Tumours of indifferent cells. (Blastocytes.)	BLASTOCYTOMATA.
(*b*) Tumours of connective tissue cells also of lymphoid tissue cells and muscle cells. (Mesocytes.)	SARCOMATA. (Mesocytomata.)
(1) Pure Sarcomata.	
Round cells,	Round celled Sarcoma.
Spindle cells,	Spindle celled Sarcoma.
Giant cells,	Giant celled Sarcoma.
(2) Compound Sarcomata.	
Fibrocytes,	Fibrosarcoma.
Chondrocytes,	Chondrosarcoma.
etc., etc.	etc., etc.
(*c*) Tumours of Epithelial cells.	CARCINOMATA. (Epicytomata.)
Squamous epicytes,	Squamous celled Carcinoma.
Columnar epicytes,	Columnar celled Carcinoma.
Spheroidal epicytes,	Spheroidal celled Carcinoma.
Endocytes,	Endothelial celled Carcinoma.
Syncytium,	Syncytial Carcinoma.

This classification has the great advantage that it enables us, if we are sure of what we see with the microscope, to place any given specimen in its proper place. In other words, the

classification is based on facts which can be observed and not on any theories which may vary from time to time. Many attempts have been made by different authors to fashion a classification of tumours on an embryological basis but they all fail when put to the test. To my mind a classification based on embryology is unscientific and useless. A classification should always be based on facts and not on theories. We do not, for instance, classify common objects according to their ultimate derivation but according to their structure or the uses to which they are put. Who, for instance, would classify metal goods according to the mines from which the metallic ore was obtained? Yet this is exactly comparable to a classification of tumours on an embryological basis.

Another advantage of this scheme is the fact that the classes *Histiomata* and *Cytomata* correspond to the classes distinguished clinically as *simple* and *malignant* tumours. Each kind of tissue is represented by a tissue tumour and every kind of cell by a cell tumour.

Nomenclature.

The different kinds of cells are named by adding the termination *-cyte* to a root expressing the nature of the cell according to the following scheme:—

A. Indifferent cells,			BLASTOCYTES
B. Epithelial cells,			EPICYTES.
C. Connective tissue cells,			
Fibrous tissue cells,	FIBROCYTES.	DESMOCYTES.	MESOCYTES.
Cartilage cells,	CHONDROCYTES.		
Bone cells,	OSTEOCYTES.		
Fat cells,	LIPOCYTES.		
etc.	etc.		
D. Bone marrow cells,	MYELOCYTES.		
Spleen pulp cells,	etc.		
etc.	etc.		
E. Free cells.			
Blood, Lymph, etc.	LEUCOCYTES.	ALETOCYTES.*	
	ERYTHROCYTES.		
	LYMPHOCYTES.		
F. Nerve cells,		NEUROCYTES.	
G. Muscle cells,		MYOCYTES.	

* Αλήτης Wanderer.

The histiomata are named by adding the termination *-oma* to a root expressing the nature of the tissue which is characteristic of the tumour. The adoption of this rule involves the abandonment of the term *epithelioma* as expressing one of the kinds of carcinoma. In this sense the term is wholely unnecessary and redundant and implies a distinction from other kinds of carcinoma which is not warranted by the pathology of the disease. For the same reason the term *endothelioma* is discarded in the malignant sense. Owing to the term *epithelioma* having been used as implying malignancy the epithelial histioma are called *papillomata* when the epithelium covers the surface, and *adenomata* when the epithelium forms tubes and spaces imbedded in a connective tissue stroma.

Relation of Tumour Growth to other processes.

There are numerous other diseases which bear a close resemblance to tumours in their general characters. They are characterised by the progressive nature of their course and by their apparently causeless origin.

In the breast we occasionally meet with a *progressive hypertrophy,* the whole breast enlarging without apparent cause and with no apparent limit to its growth. Similar cases are also met with in the thyroid (*Goitre*), in the prostate, etc.

Next we find cases in which one of the tissues of an organ, usually the connective-tissue, undergoes a progressive increase. This is seen in *progressive fibrosis* of nerves, in the prostate, and probably in some cases of cirrhosis of the liver.

The distinction between these conditions and histiomata is that in these conditions the whole organ is affected, the tissues retaining their typical relationship but being altered in amount, while a tumour is localised to one part of the organ. Progressive hypertrophy of, *e.g.*, a glandular organ corresponds to a diffuse adenoma while progressive fibrosis corresponds to a diffuse fibroma.

Again we find cases where the tissues undergo a *progressive atrophy,* as in the primary muscular atrophies, in progressive muscular atrophy, and in some other nervous diseases.

We also find cases of continued excess or defect of functional

activity (*Hyperergasis, Hypo-ergasis*) as, for example, in diabetes insipidus, diabetes mellitus, exophthalmic goitre, and numerous nervous and mental diseases.

Lastly we find cases of *progressive metaplasia* as seen in Myositis ossificans and probably in the articular cartilages in Rheumatoid arthritis.

Other examples of one or other of these conditions are found in pernicious anæmia, erythrocythæmia, leucocythæmia, Hodgkin's disease, etc.

The processes underlying these diseases have always been a puzzle to pathologists and clinicians. They are closely allied to tumour growth. Like tumours these diseases arise without apparent cause or many different causes may appear to give rise to the same disease. Like tumours, also, their course is progressive and only slightly, if at all, influenced by treatment, and recovery is rare.

We must, then, consider tumour growth as a member of a group of processes which together may be called the *progressive processes* as opposed to the *reactive processes* which are seen in the inflammatory and adaptive changes.

Difference between Simple and Malignant Tumours.

A most important point in connection with the classification of tumours is the following:—Is it possible by a histological examination to say definitely whether a given tumour is malignant or not? I have said that it is possible to allot any given tumour a place in the classification provided that we are sure of what we see with the microscope. In certain cases, however, it is not always easy to say exactly what the structure is at which we are looking. Endothelial cells resemble epithelial cells or sometimes connective tissue cells very closely and certain inflammatory conditions resemble certain tumours. Also certain carcinomata bear a close resemblance to certain adenomata. This difficulty can often be overcome by examining a number of sections from different parts and prepared by different methods.

In order to answer the above practical question satisfactorily it is necessary to decide on the question—What do we mean

by malignancy in a tumour? The signs of malignancy are usually given as rapidity of growth, ulceration, infiltration, the production of metastases, and the presence of cachexia. To my mind the one necessary feature of malignancy is infiltration of the surrounding parts. The infiltration may be present in a very varying amount and may not be evident to the unaided eye but it can always be detected by the microscope if the right part of the tumour be examined. In other words, the distinction between the histiomata and the cytomata lies essentially in their mode of growth. If, for instance, we examine a chondroma we find everywhere typical cartilage surrounded by fibrous tissue (Fig. 3). In growing, it displaces the surrounding tissues without infiltratng them. In a chondro-sarcoma, on the other hand, the nodules of cartilage, instead of being surrounded by fibrous tissue, are surrounded by sarcoma cells, and these cells are able to infiltrate the surrounding tissues, proliferating there and giving rise to the cartilage as a secondary product (Fig. 4).

Again, an adenoma presents itself as an encapsulated or pedunculated tumour and the epithelium of the tumour is everywhere surrounded by some of the stroma (Fig. 5), whereas a carcinoma, while it may resemble an adenoma in its older parts (Fig. 6), yet, in its actively growing parts, shows epithelial cells penetrating the interstices of the surrounding tissues, and any tubes or spaces in the carcinoma are of secondary origin (Figs. 7, 8). The tubes, once formed, are capable of continued growth in which they retain their tubular character. Hence, to be certain of the diagnosis in a carcinoma, especially in the columnar celled type, it is necessary to examine the spreading margin. Here it may be remarked that tumours do not always grow uniformly; one part may grow for a time actively and then cease while another part takes on active growth. Hence it may not be easy to find the particular part of the tumour, the study of which will give a decided answer to the question of the presence or absence of malignancy.

In order, then, that the pathological diagnosis may be of value, the pathologist must always be supplied with as much of the tumour as is available, including, if possible, some of

the surrounding tissues, and he should be informed of the clinical features of the case. The use of the microscope affords the most certain, sometimes the only, means of diagnosing the nature of a tumour.

We can now reply to our question as follows:—Theoretically it is always possible by a histological examination to say whether a given tumour is malignant or not.

Practically it is possible in the great majority of cases to give a decided answer from a simple microscopical examination. In the few remaining cases it may be necessary to make an extended examination of different parts of the tumour before coming to a definite conclusion.

It is not always necessary to detect actual infiltration of the surrounding tissues to give a diagnosis of malignancy, as there are other factors which assist in the diagnosis, such as irregularity in the epithelium (in carcinoma), rapid and irregular proliferation as indicated by mitotic figures, etc., etc. It is often easier to say that a tumour is malignant than to give a decision on the less important question as to what type of cancer to refer it.

We see, then, that the cytomata differ from the histiomata in their mode of growth. In the former the spreading part is cellular, the formed tissues being of secondary formation, and in the latter the formed tissues grow as tissues from the first. In the former, the mode of growth is infiltrative, in the latter expansive. I shall have occasion to return to this point.

Rudiment of Origin.

In considering the life-history of a tumour we have, first, to consider what is the rudiment from which the tumour springs? What is the first beginning of a tumour?

Cohnheim endeavoured to explain the origin of tumours by supposing that they originated from rudiments which were sequestrated in embryonic life from the surrounding tissues, and took no further part in normal development. He supposed that these rudiments, retaining their embryonic characters, would, when the surrounding conditions were altered, as, for example, by irritation, show a greater power of proliferation, and he thus

explained the great powers of growth exhibited by tumours. While this theory will not explain all tumours and is unnecessary in the great majority of tumours, it is applicable in certain cases.

Beard[3] attributes tumours to aberrant germ cells. According to this authority the fertilised ovum, in its initial proliferation, gives rise to a definite number of primitive germ cells, one of which gives rise to the embryo, while the others migrate into the body of the embryo and there become the primary germ cells of the sexual glands. Occasionally, instead of passing to the sex glands, these germ cells become deposited in other parts, where, in after life, they may give rise to tumours. There is not any evidence in support of this hypothesis, which is based on purely embryological grounds, and a strong objection to it is that it will not explain the close resemblance of a tumour to the tissues at its site of origin.

It was laid down in the definition of a tumour that the component parts of a tumour resemble structures normally found in the body. When we consider individual tumours we can expand this statement and say that the cells or tissues of which a tumour is composed resemble, in the great majority of cases, those present at the site in which the tumour originated. Seeing that this resemblance exists it is natural to suppose that the tumour arises, directly or indirectly, from the normal structures at the place of origin, and we can, I think, take it as a fact that this is the case in the great majority of tumours.

There are cases in which the tumours are composed of tissues not normally present at the site of origin, but even in these cases it is not always necessary to suppose an aberrant rudiment. We know, for instance, that under certain circumstances, it is possible for tissues to undergo metaplasia. The various kinds of connective tissue are interchangeable, as are also the various kinds of epithelium. We know, for example, that cartilage or bone may arise in connective-tissue: hence it is not necessary to suppose an aberrant rudiment of cartilage to explain the presence of a chondroma in positions in which no cartilage normally exists. Again, we know that columnar epithelium may undergo metaplasia into squamous; hence it is not necessary to suppose an aberrant rudiment to explain the occurrence of a squamous-

celled carcinoma in the body of the uterus. I have seen a carcinoma of the cæcum which to a large extent consisted of typical squamous cells.

Ribbert [7] accepts Cohnheim's views for many tumours, but in addition states that the rudiments from which tumours originate may arise during post-natal life. In this case they consist, not of the normal tissues directly, but of some portions sequestrated from them by an inflammatory process or otherwise separated from their organic connections with the neighbouring parts, and these rudiments, being freed from the normal influences of the surrounding tissues, proliferate and so give rise to tumour growth. The first change in carcinoma, for instance, is a kind of inflammatory change in the connective tissue which proliferates and penetrating between the epithelials cells isolates them. These cells, being thus isolated and freed from the influences of the neighbouring cells, proliferate, and thus give rise to the carcinoma.

This idea, while undoubtedly true in many cases, is not, I think, necessary for all cases. It is a point very difficult to prove, and in some cases the connection between the tumour and the normal tissue is so close as to make it difficult to believe that the former has not developed directly from the latter.

We can say, then, that tumours arise from normal tissues directly or indirectly. They may also, in certain cases, arise from rudiments such as those postulated by Cohnheim. We may add that one tumour may arise from the tissues of another tumour.

The rudiment from which a tumour grows may be of any size. Some may start from a single cell, while others may originate from a whole organ, as in cases of diffuse carcinosis of the breast, stomach, or liver.

Mode of Growth.

The next point to consider is: How does the tumour grow from the rudiment? This question will be considered more fully later on. We may here state that tumours grow by proliferation of their own cells, the surrounding tissues taking no part in the process. We must, however, limit this statement

by saying that the area from which the tumour arises may increase in size, and, to this extent, the surrounding tissues may take some part in the growth, but it is only the tissues in direct continuity with the point of origin which act in this way. For instance, in a carcinoma of the breast the acini surrounding the tumour take no part in the growth, but are destroyed by it. Also in a carcinoma of the skin, while the area of origin may extend, yet the tumour itself grows by proliferation of its own cells, and, if it come in contact with the epidermis at a distance from the point of origin, the epidermis is destroyed by the advancing tumour and takes no part in the growth.

I have seen an angeioma of the liver which measured about 12 inches in diameter and reached as low as the iliac fossa hanging from the right lobe of the liver.[6] It was a cavernous angeioma and had been of rapid growth as far as could be determined from the history. Now throughout the tumour, even at its lowest margin, could be found, in the trabeculæ between the cavernous spaces, bile ducts and groups of hepatic cells (Fig. 9). The growth was too great to be due to a simple angeiectasis, *i.e.*, to a simple dilatation of pre-existing vessels, and, if the growth had proceeded by proliferation of the tumour cells alone we should not expect to find the hepatic remnants throughout it. Hence the most obvious explanation of the growth is that it started in a limited area, and, as growth proceeded, successive capillaries abutting on this area took on an active proliferation, and so the area of origin continued to extend among the liver cells, and, in consequence, the bile ducts and other hepatic remnants became elongated with the growth of the tumour.

Centripetal growth, then, does not occur except in connection with the area of origin, but the growth is centrifugal.

Centrifugal growth may be either central (expansive), occurring in the substance of the mass, or peripheral (infiltrating), occurring at the periphery. The former is the mode of growth characteristic of the histiomata, the latter of the cytomata. Peripheral growth, however, is usually accompanied by central or expansive growth, but in some cases the periphery may continue to grow while the centre has ceased growing or has become necrotic.

PART II. CANCER.

Cytomata.

Coming now to the cytomata with which we are more particularly concerned, you will observe that I have divided this class of tumours into three genera, *Blastocytomata, Sarcomata,* and *Carcinomata,* and I must define what I mean by these three kinds of cancer.

When a fertilised ovum divides, the cells which first result from its division are indifferent cells or *Blastocytes; i.e.,* they are cells which show no differences by which they can be distinguished from one another and, in the course of development, each may give rise to more than one kind of cell. As proliferation proceeds these cells become differentiated and, when this takes place, we can distinguish two types of cell:—*Epicytes,* or cells arranged in contact with each other forming a membrane which covers a surface or lines tubes and spaces (epithelial cells), and *Mesocytes,* which are cells separated from each other by intercellular substance or by the intervention of more or less definite fibrillar tissue (connective tissue cells, muscle and nerve cells). To these three types of cells correspond the three genera of the cytomata.

Blastocytomata.* A blastocytoma is a tumour of which the essential cells are indifferent cells or *blastocytes.* The only means by which we can recognise these cells is the fact that they become differentiated into different types of cells, both epicytes and mesocytes. Hence the blastocytomata are mixed tumours containing epithelial and other elements both derived by differentiation from the fundamental indifferent cells. The best example of this kind of tumour is seen in the congenital mixed tumour of the kidney which is the commonest form of renal growth in children. If we study one of these tumours carefully we find that the most conspicuous elements are small round cells resembling sarcoma cells (Fig. 10). Embedded in

* In the Erasmus Wilson lectures (10) I named these tumours Blastomata. I have altered the name because objection has been taken to the use of the term Blastoma in this sense, this term having been previously used to include all tumours.

these are numerous epithelial tubes and, here and there, can be found striated and smooth muscle fibres and the various forms of connective tissue. Now a careful examination reveals the fact that, in places, there is direct continuity between the round cells and the epithelial cells and it can be determined that the epicytes arise from the small round cells. The earliest stage in the process is seen as a circular grouping of some of the round cells (Fig. 11). Later on these cells assume the characters of epithelial cells and the centre of the group disappears leaving a lumen to the epithelial tube thus arising (Fig. 12), but still there is no sharp demarcation between the epicytes and the surrounding cells. The tube, once formed, continues to grow and develops a basement membrane. Hence, in many places, the epithelial tubes appear to be sharply marked off from the surrounding cells and to have no immediate connection with them. It is only in certain places that the connection can be traced. In other places a similar connection can be traced between the fundamental cells and the various other forms of tissue present (Fig. 13). In support of this view of these peculiar tumours is the fact that the epithelial tubes, while often showing branching, are independent of each other and lie free among the surrounding fundamental cells. This can be determined by means of serial sections.

In the later history of these epithelial tubes it will sometimes be found that the wall becomes invaginated on one side and the epithelial cells become flattened so that a structure is produced which bears a striking resemblance to a glomerulus before any blood-vessels have penetrated into it (Fig. 14).

Another example of the blastocytomata is to be found in the mixed tumours of the parotid. In these tumours the fundamental cells are polygonal cells with branches which communicate with the processes of neighbouring cells. If we examine the preparation closely we find that, on the one hand, by approximation of the cells we get epithelial cells—the processes becoming prickles —and, on the other hand, by a separation of the fundamental cells by the intervention of a mucoid intercellular substance we obtain mucous tissue which in its turn may give rise to cartilage or fibrous tissue (Fig. 15).

Tumours with similar characters are found in the testis, the brain, and other situations.

It seems clear that in these tumours differentiation proceeds with proliferation and that the fundamental cells are indifferent cells, being capable of giving rise to various forms of differentiated cells. Hence the rudiment of origin of these tumours is a group of undifferentiated cells which retain their capacity for undergoing differentiation until the tumour develops. This is a rudiment in Cohnheim's sense. In the case of the blastocytoma of the kidney the rudiment would consist of the cells of the paraxial mesoblast which give rise to the intermediate cell mass from which the Wolffian body is developed and the development of the tubes in the tumour corresponds exactly to the development of the tubes in the Wolffian body and to the development of the glomeruli and convoluted tubes of the kidney which are of mesoblastic origin. The presence of striated muscle is accounted for by the close association of the intermediate cell mass with the mesoblastic somites from which the muscles are developed.

Sarcomata. I have divided the sarcomata into two groups —the pure and the compound.

A pure sarcoma consists of cells and intercellular substance alone without the presence of any formed tissues, whereas the mixed forms contain one or more forms of definite connective-tissue in addition to the purely cellular portions, but these tissues are of secondary formation, being developed from the fundamental cells (Fig. 4). The pure sarcomata are subdivided according to the kind of cell present and the compound according to the different kinds of connective-tissue which are developed in them.

Carcinomata. The carcinomata, like the sarcomata, are subdivided according to the type of cell present, and we may, also, if we please, divide them into *pure carcinomata* in which no definite epithelium is present, the cells being arranged irregularly, and the *compound carcinomata—adenocarcinoma* or *papillocarcinoma*—in which definite epithelium is formed either lining spaces or covering outgrowths.

It will be observed that I include the malignant endothelial

tumours among the carcinomata. I do this because endocytes bear a close resemblance to epicytes both in structure and arrangement, in fact endocytes are only a particular species of epicytes. We find that, both developmentally and under pathological conditions, epithelial cells may assume an endothelial character, and that endothelial cells may assume the columnar, cubical, or squamous type. Hence tumours arising from endothelium often bear a close resemblance to the columnar (Fig. 16), spheroidal (Fig. 17), and squamous-celled carcinomata (Fig. 18).

We see, then, that the three genera of the cytomata have similar characteristics. In all of them the fundamental elements are cells and in all of them tissues may arise as secondary formations. The pure blastocytoma, *i.e.*, a tumour composed entirely of blastocytes, probably exists, but we have no means of recognising a blastocyte apart from the differentiated cells which arise from it. Possibly the tumour which we know as the round-celled sarcoma is an example of a pure blastocytoma. The pure Carcinomata, *i.e.*, the carcinomata in which the epicytes are arranged irregularly without any tendency to form definite epithelium are seen, especially in the spheroidal-celled and in some sqamous-celled growths, and the pure sarcomata are the ordinary round-celled, spindle-celled and giant-celled sarcomata.

In the compound cytomata we recognise, in the blastocytomata, epithelium and connective-tissue, muscle, etc.; in the sarcomata various forms of connective-tissue; and in the carcinomata definite epithelium, either in the form of tubes (*adenocarcinoma*) or as papillary outgrowths (*papillocarcinoma*).

Cancer in Animals.*

Cancers and other tumours occur in all kinds of vertebrate animals and probably in some invertebrates (Figs. 19—24). They resemble in structure and characters the corresponding tumours in Man, and much valuable knowledge has been gained

* For an account of cancer in animals see the various Scientific Reports of the Imperial Cancer Research Fund.

from the experimental study of these tumours. This experimental study has been carried on especially in mice which are comparatively frequently affected by tumours and it has been found possible to transplant from mouse to mouse carcinomata, sarcomata, and chondromata so that the growth of the transplanted tumours can be followed from the earliest beginning. It is found that the tumour originating in a mouse as the result of inoculation with a small portion of a tumour from another mouse is the result of the proliferation of the cells of the portion of tumour introduced.

Rudiment of Origin.

With regard to the rudiment of origin of a cancer there is little to add to what we have already said in regard to tumours in general. Cancers may start from the normal tissues of the part, or from sequestered rudiments, or again from other tumours, and the rudiment may be single or multiple. In certain cases a carcinoma may start from the epithelial cells of a whole organ. These are, perhaps, more correctly described as cases of diffuse *carcinosis* of the organ. Such cases have been described in the breast and stomach and occasionally in the liver and other organs. Primary carcinoma of the serous membranes, particularly of the pleura, usually takes this form, appearing as a general thickening of the membrane involved. The same may be the case in sarcomata, *e.g.*, in diffuse sarcoma of the liver. These conditions bear the same relation to Carcinoma and Sarcoma that progressive fibrosis does to Fibroma.

The area of origin of a carcinoma may, in some cases, increase in size, successive neighbouring portions of epithelium taking on a cancerous growth, but, as a rule, the increase in size, *e.g.*, of a cancerous ulcer, is due to continuous proliferation of the cells arising from the original rudiment, the surrounding epithelium being destroyed and taking no part in the tumour growth. Hence, from an examination of the tissues in the neighbourhood of a cancer, we cannot draw any conclusions as to the structures from which it has arisen.

As to the organs from which cancers arise we can say that the organs most frequently affected are those which are exposed

to chronic irritation or traumatism or those which are liable to considerable variations in functional activity.

Mode of Growth.

A cancer, like other tumours, grows by proliferation of its own cells. The predominant type of growth is, as we have seen, peripheral; that is to say, the tumour cells at the periphery proliferate and penetrate the surrounding tissues thus giving rise to the infiltration which is the characteristic feature of malignancy. In most cases, however, this peripheral growth is associated with central expansive growth, *i.e.*, it is not only the younger peripheral cells which proliferate but also the older cells in the mass of the tumour.

When this expansive growth occurs to a considerable extent the tumour may present an appearance of encapsulation due to the compression and consolidation of the surrounding tissues by the expanding mass. The encapsulation is, however, apparent only, and examination with the microscope will show that the peripheral cells are proliferating beyond the apparent capsule and infiltrating tissues. This apparent encapsulation is more frequent in Sarcoma than in Carcinoma while in Carcinoma more frequently than in Sarcoma we see the opposite condition, the peripheral cells proliferating and infiltrating while the central cells have lost their power of proliferation and are degenerating. Hence a carcinoma, as is seen sometimes in Rodent Ulcer, may continue to spread while the older parts become healed.

The peripheral mode of growth explains the destructive characters of cancers. The cells penetrating the surrounding tissues, find their way into all available spaces and proliferating there separate the constituents of the tissues and cause them to undergo atrophy *in situ* without displacing them (Fig. 25). Cancer cells can penetrate into and proliferate within fat cells (Fig. 26) and striated muscle fibres. Dense substances such as cartilage, in which there are no available channels, withstand the encroachments of a cancer for a long time. We can say, then, that cancers replace, rather than displace, the surrounding tissues.

Modes of Extension.

Permeation. Cancer spreads to the parts surrounding the primary mass by a mode of extension known as *Permeation*. We have seen that the primary mass grows by the peripheral cells proliferating and infiltrating the surrounding tissues. Permeation is an extension of this process, the cells proliferating continuously along the lymphatic channels. In the case of external cancer this permeation of lymphatics takes place to a greater extent in the deep fascia than in the superjacent or subjacent tissues while here and there processes of the growth grow towards the surface and give rise to nodules of tumour having no apparent connection with the primary mass. Thus are explained the cutaneous nodules sometimes seen in Carcinoma of the breast and also the infiltration of bones, muscles, etc.[4] This permeation is not confined to the lymphatic channels but may take place along veins, tendon sheaths, nerve sheaths, ducts, etc., any natural channel forming a path by which the cancer can grow. While this proliferation takes place in continuity we may find that the chain of cells is not continuous at any one moment. While the cells at the extremity of the chain are proliferating, some of the cells nearer the primary mass may have disappeared and the channel been obliterated by cicatrisation. The direction of growth in permeation is not dependent on the direction of the current in the lymphatics, etc., but takes place to an approximately equal extent in all directions radiating from the primary mass. Secondary tumours may also be centres of permeation.

Growth of the same kind, viz., proliferation in continuity, may take place over long distances. We may find a tumour growing along the large veins or along the whole length of the thoracic duct.

Metastasis. When the growth has penetrated into a lymphatic or vein it is easy to understand how individual cells or groups of cells may become detached and carried on by the lymph or blood-stream. Such detached cells, being carried to the smaller arteries or capillaries, become lodged as emboli and commence to proliferate, thus giving rise to a new tumour with

no direct communication with the primary growth. This phenomenon is known as *metastasis* and the growth as *metastatic growths*. The lymph glands, lungs and liver are naturally, owing to their position with regard to the circulation, the most frequent seats of metastatic growths. The entry of the cancer cells into the blood-vessels may be either directly, by penetrating the wall of a capillary or vein (Fig. 27), or indirectly by way of the lymphatics.

Certain organs, such as the alimentary canal and muscles, are very seldom the seat of metastatic growths. These organs may escape when there is widespread metastasis in other organs, and we must suppose that the tumour cells in these cases are carried to the alimentary canal and muscles as well as to the other organs. Apparently, however, the tumour cells in these situations do not meet with the conditions which are necessary for proliferation, and are therefore destroyed or remain latent.

Independent secondary growths may also arise from cancer cells being conveyed along the lumen of a canal, such as the alimentary canal or a duct, and settling in new situations. They may also follow upon the dissemination of cancer cells in the serous cavities.

Metastatic cancers do not usually show such an extreme power of infiltration as do the primary tumours. Often they are apparently sharply circumscribed and appear to be encapsulated. This is largely due to the fact that the expansive growth takes a larger share in the enlargement of the tumour than the peripheral, and hence the surrounding tissues are displaced rather than infiltrated.

Occasionally metastasis has been described in a tumour which does not show malignant characters histologically. Thus chondromata have been described as giving rise to metastases. In the great majority of these cases careful examination shows that the tumour is not a simple chondroma, but is a chondro-sarcoma or a carcinoma with a cartilaginous stroma. Apparently, however, there are cases where this explanation will not apply and where the tumour is a pure chondroma and does not show infiltration. These cases are characterised by a distinct growth of the tumour along the veins, and, given the

presence of a growing tumour in the lumen of a vein, it is not difficult to understand how portions can become detached and so form emboli. The presence of the chondroma within the vein is due to the tumour having come in contact with the vein from outside; ulceration of the vein, due to the pressure of the unyielding cartilage, then occurs, allowing the tumour to grow into the lumen of the vein. These cases are, however, excessively rare.

Multiple Tumours.

Multiple tumours are not as rare as they were once thought to be. The different tumours may be all of the same nature or may be of different types. They may be all malignant or all non-malignant or some may be malignant and others simple. Also the different tumours may arise in the same or in different organs and may even be combined into one growth.

I have, myself, seen several cases of multiple cancers. One of them was of particular interest. It was a case where a man had his eye removed for a melanotic sarcoma. Two years later he died with a large mass of growth in one of his ribs. Naturally this was supposed to be a metastatic growth but it proved to be a squamous-celled carcinoma apparently of endothelial origin, seeing that no primary tumour of this kind existed anywhere else in the body (Fig. 18). Besides this tumour he had innumerable spindle-celled sarcomata in the liver, each tumour being about the size of a pea and none of them pigmented.

Another interesting case was a columnar-celled carcinoma of the stomach in which the stroma was sarcomatous, being composed of small round cells. In this case there were several metastatic tumours all of which were sarcomatous. This appears to have been a case of primary carcinoma in the stroma, of which a sarcoma developed, the sarcoma becoming predominant.

Cases have also been described of mixed carcinoma and sarcoma in which the metastases have been some of one type and some of the other.

The Stroma of Carcinoma.

A carcinoma is usually described as consisting of epithelial cells in a connective-tissue stroma, and the question arises whether both constituents are to be regarded as integral portions of the tumour. There can be no doubt that it is the epicytes which are the active constituents of the tumour, and the fibrous tissue is merely a supporting tissue derived from the connective-tissue of the organ in which the tumour is growing. The growing part of a carcinoma is entirely cellular, the epicytes infiltrating the surrounding structures (Figs. 25, 26), and the stroma is produced as a secondary formation from these structures by condensation and proliferation of the connective-tissue. This fact has been confirmed by the observation of experimental carcinomata in mice. In every case in which a carcinoma is transplanted from mouse to mouse the stroma degenerates, while the epicytes continue to live and proliferate. A new stroma is subsequently supplied by proliferation from the tissues of the animal into which the tumour has been transplanted.[2] (No. 2). There are cases, however, which it is difficult to explain on this view that the stroma is formed from the tissues in which the tumour is growing. Such are the rare cases of carcinoma with a cartilaginous stroma which gives rise to metastatic tumours of the same character. In some of these cases, at any rate, the tumour grows along the interior of a vein, and a portion may be bodily detached containing both epithelial cells and cartilage, both of which continue to grow when they become lodged in a new situation. We should have to assume in this case that the tumour was a combined tumour.

Whether this is so or not there is no doubt that the epicytes have an influence on the stroma and that the cells which give rise to a metastasis can so influence the tissues at the new site that they produce a stroma with the characteristics of the stroma of the original tumour. A carcinoma arising in any organ usually shows a stroma resembling the stroma normally present in that organ and the metastases show a similar stroma. This is especially seen in adrenal tumours. In the transplantation

of mouse carcinoma the new formed stroma assumes the characters of the stroma of the original tumour.

I have mentioned that a sarcoma may arise in the stroma of a carcinoma and it has been observed in the experimental transplantation of carcinomata in mice that occasionally, during successive transplantations, a sarcomatous stroma appears and eventually supplants the carcinoma, the sarcoma itself being transplantable.

Vascular Supply.

The blood-vessels in a cancer are derived from the capillaries of the part in which the cancer originates. As the tumour grows the capillaries enlarge and lengthen and new capillaries may be formed from them. At the same time the gradually enlarging tumour engulfs more and more of the surrounding capillaries and other vessels which then become available for its nutrition. The blood-vessels in a cancer retain the capillary structure to a large extent although they may become dilated into sinuses and they show little tendency to become fully developed into arteries and veins. Hence the vascular system of a cancer consists mainly of capillaries and wider sinus-like channels arranged in an irregular network which connect with the blood-vessels of the surrounding part at all points in the surface of the tumour.

In a carcinoma the blood vessels run in the stroma. In those cases of Carcinoma in which the stroma is present in very small quantities and in sarcomata where the vessels run along the cells, hæmorrhages are likely to occur owing to the imperfect structure of the blood-vessels. In endothelial cancers the tumour cells themselves may form new blood-vessels in the same way that the cells of a columnar-celled carcinoma may form epithelial tubes.

Ultimate Destination.

Having considered the sources and modes of growth and extension of cancers we have next to consider what is the ultimate destination.

Unfortunately, the great majority of cancers continue to

increase until death results. We have seen, however, that some cancers while spreading in one part heal in others. These cases are seen especially in Rodent Ulcer and atrophic Schirrus. Such tumours may continue to grow for years without producing any except local effects.

Some tumours, even sarcomata and carcinomata, disappear spontaneously. Several cases of undoubted cancer verified by histological examination have been described which have disappeared completely, either without any treatment, or with such treatment as could not produce such an effect of itself. We do not in the least know whether there is a spontaneous cessation of proliferation or whether there is an enhanced effort on the part of the organism to stop the encroachment of the tumour. From the rarity of these cases it would seem to be an idiosyncrasy on the part of the individual tumour or patient and we have no means at present of reproducing the conditions in other tumours or other patients.

Some light, however, has been recently thrown on this question by the experimental investigation of mouse cancer. It is not uncommon for a cancer in a mouse, after growing for some time, to cease growing and to degenerate, ultimately disappearing completely. Such mice are found to be immune to subsequent inoculation. This immunity is specific in the sense that a carcinoma does not confer immunity towards a sarcoma and *vice versa,* and it is specific in a stricter sense. It is found that a given carcinoma confers a much higher degree of immunity towards subsequent inoculation of the same tumour than towards a carcinoma of different origin.

Degenerative Processes.

Apart from disappearance, cancers may undergo various retrogressive processes, such as fatty and colloid degeneration and calcification. These changes in cancers are not always to be regarded as strictly degenerative changes. We find that the alterations often correspond to the changes which take place normally in the cells from which the cancer has arisen, and the changes are thus more allied to secretory than to degenerative processes. Fatty changes are especially common in breast

cancers; the cells of a carcinoma of the thyroid secrete colloid; columnar-celled carcinomata of the stomach and intestines secrete mucin; those of adrenal carcinomata contain fat and cholesterin. Also sarcomata of bones are prone to ossify or calcify.

Cancers can also exhibit inflammatory changes.

Metabolism.

We know little about metabolism in Cancer. Seeing that the cancer cell is derived from the cells of the organism we should naturally expect that, making allowance for the rapid proliferation, the metabolism would be similar to that of the normal tissues of origin. I have mentioned that carcinoma cells often secrete the same substances as the normal cells of the organ in which the carcinoma arises. Besides the examples given above I may mention that trypsin has been found in carcinomata of the pancreas and pepsin in carcinomata of the stomach.

Many carcinomata contain a large amount of glycogen, and some have maintained that the amount of glycogen is proportional to the degree of malignancy. This is, however, not necessarily the case. While it is common in cancers, it is also found in some simple tumours, being always present in chondromata. The presence or absence of glycogen appears to depend more on the origin of the tumour than on the rapidity of its growth.

There do not seem to be any definite changes in the urine, temperature, pulse etc., due to cancer *per se*.

In studying questions of metabolism it is difficult to separate the effects of the cancer *per se* from those due to the disturbance of the organ affected.

Clinical Features.

The clinical features of cancer can be explained by the pathology of the disease. The fixation of the tumour to the surrounding parts is explained by the infiltrative mode of growth. The appearance of cutaneous nodules in the neighbourhood of an external cancer is attributable to the permeation

of the lymphatics. The extension to the lymphatic glands is attributable to permeation and embolism, and visceral deposits depend on metastasis by the blood-stream. Degeneration and softening depend on the imperfect blood supply, and cachexia on the drain of nutrient material combined with the absorption of the products of disintegration of the tumour cells, and of bacterial products in the case of ulcerated cancers. There does not seem to be a specific cancer toxin.

Recurrence after removal is due to imperfect removal, and is not characteristic of cancer alone. Simple tumours recur if the removal is incomplete. In cancer, however, since the tumour is not encapsulated, it is impossible to define its bounds, and hence outlying cancer cells are very liable to be left behind to give rise to a recurrent growth. Also, since cancer cells are transplantable, infection of the wound is liable to occur at the operation. When recurrence occurs at a distance from the original operation it is not necessarily to be attributed to imperfect operation. We have seen that multiple tumours are not so very uncommon; hence when recurrence takes place at a distance it is quite likely that the new tumour is independent altogether of the original one. This is especially likely to be the case when the new tumour arises in a part which is a common site of a primary tumour. When, for instance, after removal of a breast, a cancer appears in the other breast, it is possible, and even probable, that this second tumour is a new formation altogether and independent of the former one. The breast is a rare situation for a secondary tumour, while it is a common site of primary growths. In some of these cases of recurrence after operation the new tumour shows a different histological structure from the original one, and hence must be regarded as independent.

(To be continued.)

CHRONICLE.

Medicine.

Poliomyelitis Anterior as an Epidemic Disease.

BERG (H. W.). *Medical Record*, 1908, No. 1.

THE writer is of opinion that the so-called epidemic polio-myelitis anterior is a distinct disease, more properly termed epidemic meningo-myeloencephalitis; that the sporadic disease is not infectious, and that the epidemic disease is in all probability infectious but not contagious. He bases his conclusions on experience of last summer's epidemic in New York and surrounding cities, and on a comparison of the published autopsy findings in sporadic and epidemic cases respectively.

The incidence was not limited to any class of society. The writer himself saw 25 cases. In some the clinical features were those classically recognised as infantile spinal paralysis; in many, however, these were combined with the symptoms of acute bulbar paralysis. Three of the writer's cases were of this type, all three ending fatally. The remaining were ordinary cases and were divisible into two groups: (1) cases with fever of short duration resembling in their histories ordinary sporadic cases; and (2) cases marked by fever of long duration. In the latter the paralysis was of less extent than in the former; one case in which the only muscles paralysed were those supplied by one facial nerve had a temperature of 102° on the eighth day. There was a considerable though unascertained death-rate in this epidemic. As regards the permanency of paralysis however the prognosis given was several times at fault, and two cases recovered entirely in six weeks, no obvious paralysis remaining.

Clinically the epidemic disease is peculiar in attacking older children and adults as well as infants. Fever is of longer duration and is never absent. Many of the children were delirious and semicomatose, emerging very slowly. There was hyperæsthesia of the whole surface, and in many cases seen early some rigidity of the neck and spine. The patellar reflexes were mostly absent. In some there was incontinence of urine and fæces. Bulbar symptoms are present in some cases, and death may result from diaphragmatic and cardiac paralysis.

Autopsy findings by Harbitz and Schiel in 19 cases were as

follows: In the cord, diffuse inflammatory infiltration closely related to the vessels, chiefly in anterior horns but involving to a less extent the whole gray matter more or less along the length of the cord; microscopic inflammatory changes also in the white matter and in the pia and its prolongations; cellular infiltration (large and small mononuclear) especially in the pia and white substance; marked degeneration of the ganglion cells over large areas of the cord. Occasionally the inflammation was hæmorrhagic. Harbitz believes that the meningitis precedes the involvement of the anterior horns. In the brain leptomeningitis is also found around the medulla, pons, cerebellum, along the nerves at the base and particularly the Sylvian fissures, exceptionally even over the hemispheres. In many cases there was inflammation of the brain substance, including medulla, pons, fourth ventricle and nearly all the nerve nuclei, but the white matter was very slightly or not at all involved. Even the cortex was infiltrated in some cases, particularly around the central convolutions. The inflammation was, however, more intense in the cord than in the brain. Even in mild cases, dying subsequently of intercurrent disease, extensive degenerative changes have been found both in cord and brain to a much greater extent than anticipated. There were no changes in other organs or viscera, and no herpes or skin eruption. Lumbar punctures are sterile in the majority of reports. The epidemic disease is thus in reality a general cerebrospinal meningitis with anterior poliomyeloencephalitis.

G. R. Mill.

The Serum Disease in Man after single and repeated doses.

Currie (J. R.). *Glasgow Med. Journ.*, 1908, p. 277.

The frequency of serum rashes varies in the records of different authors from 8·1 per cent. to 54·6 per cent. The discrepancies of these figures are due to several factors of which dosage-rate is now considered significant. The reaction has no relation to the antitoxin as other sera, even the normal serum of the horse, may produce the effects. From the delay in the onset of rashes it is reasonable to conclude that horse serum at the time of injection is non-toxic to man and that antibody formation plays a part in the matter. The experiments of Rosenau and Anderson suggest that the antibody, if present, is not a hæmolysin and von Pirquet and Schick found that the serum reaction and precipitin formation did not necessarily occur at the same time in man.

The theory held at present is that during the latent period an antibody is formed and then the combination or reaction of this antibody with the antibody-producing substance in the

serum injected leads to the production of a substance, the toxic influence of which is shown by the rashes and constitutional disturbance. This, of course, applies to the phenomena following a single injection. The results of repeated doses are remarkable for their diversity. In some cases the reaction agrees in time with that after a single injection; in other cases it follows immediately on puncture. In some cases there is merely a local and fugitive erythema, while in other cases the reaction attains a severity which seems to threaten the life of the patient. Examples of five types of reaction to repeated injections are given. Years may have elapsed between the giving of the serum for the first and second times and even then the acceleration may be well marked. The author has not found any published instance of loss of life as a direct consequence of re-injection.

MILES B. ARNOLD.

A Form of Familial Degeneration of the Cerebellum.

HOLMES, (GORDON). *Brain,* 1907, part 120.

THIS is a very valuable and interesting account of four cases of primary disease of the cerebellum occurring in a family of eight members, a disease which Marie proposed to call "hereditary cerebellar ataxia." Each of the four affected members were afflicted with the same symptoms which set in between 33 and 40 years of age and progressed slowly till death, which resulted from an intercurrent affection at an advanced age. The first and most prominent symptom was a reeling or staggering gait, "like that of a drunken person," evidently due to incoordination of the movements of the lower limbs or to defect in equilibration; the next symptom to appear in each case was irregularity in, or uncertainty of, the movements of the upper limbs; and later articulation was affected, it became hesitating or scanning and explosive. Tremor of the head and limbs was mentioned in the notes of all the cases, and was referred to as a prominent symptom by a sister who was interviewed. Nystagmus, or more probably irregular nystagmoid jerkings of the eyes on movement, was observed in the three cases of which accurate notes were available. There was no defect of vision or of hearing, and no motor paralysis or sensory disturbance was detected. The tendon-reflexes were unaffected or slightly exaggerated, but ankle-clonus or other certain evidence of disease of the cortico-spinal tracts was not obtained in any of the cases. The sphincter functions were intact and there was no obvious mental impairment.

One of the cases was examined post-mortem by Dr. Holmes and a detailed account of the findings, illustrated by excellent

photographic reproductions, is given. The anatomical basis of the symptoms, judging from the evidence of the one post-mortem examination, was a degenerative affection of the cerebellum. This organ, with the medulla oblongata and the pons to a less extent, was remarkably small; it lay almost completely within the natural concavity of the base of the brain. The brain-stem and cerebellum together weighed only 58 grammes, whilst the normal weight should have been between 155 and 180 grammes. The disease was limited to the cerebellum, as although the inferior olives were also diseased, the pathological changes there were secondary and of no significance in the production of the symptoms. Microscopically there was a primary and progressive degeneration of the nervous elements of the cortex of the cerebellum and of the fibres which spring from them. The most prominent change in the cortex was the disappearance of the Purkinje cells, which was complete in the greater part of the cerebellum. The other minor changes found are referred to and the pathology of the disease is discussed in detail.

E. M. Brockbank.

Classification of Cerebellar Diseases.

In a later paper in the same journal Dr. Holmes attempts to classify primary cerebellar disease, such an attempt being necessary owing to the confusion which has arisen from the introduction of the term "hereditary cerebellar ataxia" by Marie. The paper is exhaustive, but the following is the mode of classification which the writer considers to be the most natural and the best possible.

1. Primary parenchymatous degeneration of the cerebellum.
2. Olivo-ponto-cerebellar atrophy.
3. Progressive cerebellar disease due to vascular or interstitial lesions.
4. Acute cerebellar lesions.

In these four groups all cerebellar diseases, apart from tumours and focal lesions of vascular origin, may be included. It is, however, also advisable to consider two other groups of cases in which, although the cerebellum is not affected, their most prominent symptoms have been described as those of cerebellar disease.

5. Degeneration of the spino-cerebellar tracts, the cerebellum being normal or small only.
6. Congenital smallness of the central nervous system associated with cerebellar symptoms.

There are cases which do not fully conform to the type of any of these classes, but when there are main and general resemblances in both the clinical symptoms and the morbid anatomy

it seems advisable to attempt to place them in one or other group. This is frequently the most we can do in any branch of medicine as neither nature nor disease draws lines of sharp distinction.

These various classes are considered in detail, but the only further point we may refer to here, in view of the first paper, which we have abstracted, is, that the conclusion is arrived at that no form of disease exists to which the term of "hereditary cerebellar ataxia" used by Marie can be aptly applied. Though it may be a convenient term for cases of obscure nature with some symptoms in common, neither clinical nor pathological experience justifies its retention as the descriptive title of a form of disease.

E. M. Brockbank.

Induced Reflex Nystagmus in the Diagnosis of Disorders of the Vestibule.

Lombard (E.) and Halphen (E.) *Le Progrès Médical,* April 18, 1908.

Nystagmus due to disorders of the labyrinth consists of a rhythmical succession of two opposite movements, the first slow, the second rapid and in the reverse direction. When the more rapid movement is towards the right, the nystagmus is said to take place to the right, and *vice versa*. The amplitude of the movement is perceptibly increased by efforts to look in its own direction. Nystagmus may take place in three directions, corresponding to the three semi-circular canals: it may be horizontal, vertical or rotatory, or it may take an intermediate direction, representing a combination of two or more of the preceding movements. It may be spontaneous, and may occur in subjects with a normal labyrinth: it always appears in acute affections of the labyrinth, accompanied by vertigo. Induced nystagmus is of greater diagnostic value, and may be brought about by rotating the patient, by injecting hot or cold water into the meatus, by electrical stimulation, or by compression by air in cases in which a labyrinthine fistula exists. The two former are alone considered. In rotating a normal subject from his own left hand towards his right, nystagmus will at the outset of the movement take place towards the right, and towards the left at its cessation. The reflex will fail if the labyrinth is destroyed, and will be modified in intensity and duration if there is only diminution in its function. On injecting cold water into the meatus of the right ear in the normal subject, with the head upright, a rotatory nystagmus appears towards the left; hot water produces rotatory movements in the opposite direction. In lesions of the labyrinth, the reflex may fail altogether, or it

may be exaggerated or diminished. If in a case of vertigo the reflex is normal in all respects, the origin of the vertigo may be looked for elsewhere than in the vestibule. If there already exists a spontaneous nystagmus, failure to alter its character by changes in temperature will point to an intracranial origin.

JAS. W. RUSSELL.

Bulbar type of General Paralysis.

MILIAN (DR.). *Le Progrès Médical,* April 4, 1908.

TWO forms of the bulbar type of general paralysis have been described: namely, a variety presenting glosso-labio-laryngeal paralysis, and one in which symptoms of Graves' disease are concurrent with those of general paralysis. The author records a case in which bulbar symptoms of yet another variety were observed. The patient was a man, aged 30 years, who was supposed to be suffering from neurasthenia. Appearance, speech and the mental condition, however, were all symptoms which pointed to general paralysis. As the case developed, the patient suffered from alternate salivation and dryness of the mouth, crises of vomiting with painful digestion, palpitation, permanent tacchycardia with a pulse of 124 in the upright position, and dyspnoea with respirations 36 to the minute. The tacchycardia and dyspnoea were greatly increased in the horizontal position, being accompanied by a sense of constriction in the throat and such distress that the patient was obliged to arise hurriedly in order to get his breath. In addition, he suffered from crises of distress, occurring generally in the night: he would suddenly awake in a condition of intense anxiety and fear, with tremor, sweating and sensation of impending death. The case ran the course typical of general paralysis, and the patient ended his days in an asylum. Brissaud describes similar crises of anxiety as occurring in lesions of the bulb.

JAS. W. RUSSELL.

Generalised Vaccinia.

DANZIGER (FELIX). *Münch. med. Woch.,* August 6, 1907.

THIS is an account of an outbreak of generalised vaccinia occurring in the dermatological department of the City Hospital in Frankfurt. The first case was an infant of six months who was attacked 15 days after his elder sister æt $1\frac{3}{4}$ had been vaccinated. On the day of admission and during the following month five cases were attacked in the hospital, of which four were being treated for eczema and one—an infant—for congenital syphilis from which it died. The symptoms were characteristic,

pustules of the size of peas with central depression, occurring mostly on the face and head, and upper part of body; some œdema and swelling of cervical glands—in two cases, suppurating; some cough, and fever—rising to 102°. The eczema in each case was made worse.

The author discusses the question whether these attacks are caused by an inoculation (or an autoinoculation) or arising spontaneously from within outward, and, although he leaves the question still unanswered, he inclines to the inoculation theory.

J. M. BERNSTEIN.

Eczema following Prolonged Baths.

KUSTER. *Münch. med. Woch.*, August 6, 1907.

IN the eczema produced in patients subjected to prolonged immersion Dr. Kuster was able to find a growth of mycelium with spores which after repeated failure by the usual methods, he was able to cultivate in test tubes. In these he had a layer of glycerin-horse blood serum hardened by heating to 100°C. He filled these tubes with sterilized water of the baths and added varying quantities of formalin—from 1 part in 500, to 1—10,000, and inoculated them with the detritus from the skin mixed with kieselguhr. This produced the same mycelium and small cells which were then freely reproduced on firm media. The growth was identified as askomycete.

J. M. BERNSTEIN.

A Case of Cholecystitis Paratyphosa.

LEVEY (ALEX.). *Münch. med. Woch.*, January 7, 1908.

LEVEY found in the stools of a sailor suffering from an attack of biliary colic the "bacillus paratyphosus alcalifaciens." Cholecystotomy was performed. The gall bladder, which was covered with fibrous material, contained some small gall-stones; from the ulcerated patch in the mucous membrane he was able to obtain a culture of the afore-mentioned bacillus. After the operation there were no more bacilli. Two months before admission the patient had a dysenteric attack. Levy thinks this was a case of paratyphoid from the beginning, when two years previously he had a so-called attack of typhoid fever.

J. M. BERNSTEIN.

On Diabetic Lipæmia.

KLEMPERER and UMBER. *Zeitschr. f. klin. Med.*, 1907.

IN diabetic lipæmia an excessively large amount of fat may be present in the blood; 15, and even 23 per cent have been found;

the normal amount being from 0·5 to 1 per cent. In a case recorded by Fischer, the blood was found to contain 0·478 per cent of cholesterin; the normal percentage being 0·1 at the most. Klemperer and Umber found lipæmia in two cases of diabetic coma; and failed to find it in two others. In one case of diabetic coma with lipæmia, the kidneys were subsequently examined chemically: they yielded an ether-extract of 2·8929 per cent; of this 0·3098 per cent was cholesterin, and 0·8260 per cent was lecithin. Lipæmia is not characteristic of diabetic coma, nor of severe diabetes. When it occurs, the lipoid substance consists of only half its amount of real fat; the rest being cholesterin and lecithin. In one case of coma the cholesterin and lecithin were increased relatively to 10, and 5 times the normal.

As regards the source of the lipæmia, the view of simple transportation of fat from the subcutaneous and abdominal deposits, is not supported by these observations, inasmuch as the fat thence derived contains scarcely weighable amounts of cholesterin. Nor does the view of diminished fat decomposition suffice. The authors are disposed to attribute the excessive amount of lipoid substance in the blood to increased cell destruction. It is to be remembered that the cells are composed of an intimate admixture of protein and lipoid substance, and that when the protein is split off, the lipoid substance is set free; therefore a high degree of cell-destruction would lead to accumulation of cholesterin and lecithin in the blood. Another possibility is that degenerative change in the central nervous system, which is rich in lipoid substances, often occurs in severe diabetes; this also might lead to cholesteræmia and lecithinæmia.

The Anatomical Changes in the Adrenals in Arterio-sclerosis.

Landau (H.). *Zeitschr. f. klin. Med.*, 1907.

A relation between the adrenals and arterio-sclerosis has been assumed to exist; and Josué and others have experimentally produced atheroma in the aorta of rabbits by the intravenous injection of adrenalin. After discussing the anatomical structure and function of the adrenals, Landau proceeds to consider changes in the human adrenals in relation to arterio-sclerosis. He tabulates a number of cases in which arterio-sclerosis was present and in which microscopic examination of the organs concerned was made after death. The inference drawn is that in no instance was any intimate causal relation found between the condition of the adrenals and the arterio-sclerosis as described by Josué; whose experiments on rabbits were also repeated. Landau considers that the morphological examination of the adrenals affords no grounds for the assumption of Josué as regards the mechanism of the production of arterio-sclerosis in man.

J. Dixon Mann.

On the Symptomatology of Pleurisy with Effusion.

SCHROTTER (H. von). *Muench. med. Woch.*, 1908, No. 4.

THE writer has previously referred in his book on Bronchoscopy to the employment of this method in the recognition of extra-bronchial conditions. He now describes in detail the broncho-scopic findings in two cases, one a case of left-sided effusion, the other of contraction of the right chest following upon a pleuritic exudate. In each case a condition was thus revealed which the ordinary methods of physical examination, together with radio-scopy, failed to demonstrate.

In the first case the usual signs of a large effusion were present, breath sounds being absent except for feeble vesicular breathing at the upper part behind. Percussion showed the heart only moderately displaced. Radioscopy showed an uniform dark shadow occupying the whole left chest and extending to the right for about 3·5 c.m. beyond the sternum. There was no evidence of glandular affection or tuberculosis.

Bronchoscopy (tube of 9·5 m.m. external diameter) revealed the following. The spur at the bifurcation of the trachea was markedly displaced to the right and showed marked respiratory excursions which were communicated to the tube when the latter had been pushed on into the left bronchus; there was no pulsatory movement of the spur. The left bronchus appeared as the direct continuation of the trachea and presented above its division a stenosis caused by a projection of its upper wall. This bulging could be pushed aside by pressure on the tube, when the openings of the secondary bronchi to the lower lobe came into view. The entrance to the upper lobe could not be seen being buried in the prominence of the wall. There was no pulsation at the level of the stenosis. Paracentesis was done and about 46 ounces removed. A second bronchoscopy then showed a return of the bifurcation spur towards the median, almost a disappearance of the stenosis of the left bronchus, and dis-appearance of the respiratory movement of the spur. A tube of 11·2 m.m. diameter could be passed as far as the division to the lower lobe, and the branch to the upper lobe could be seen with its division into bronchi of the third order. Thick mucus was seen issuing from the latter and from the ventral branches to the lower lobe. Systolic pulsation of the spur was now present as also of the upper wall of the left main bronchus.

The increased air entry and the subjective improvement were greater than corresponded with the moderate increase (about 350 c.c.) in the vital capacity and with the slight return of the heart shadow towards the left, and were apparently due in large measure to the disappearance of the bronchial stenosis. The latter, he believes, was not caused by pressure of the aorta pulsation being absent at the first examination), but through

compression by the exudate itself. It would thus appear that compression of the bronchus, on the left side at all events, is to be considered in connection with the pressure symptoms in pleuritic effusions.

G. R. Mill.

"Statistics" and Physical Deterioration of Children in New York.

Koshet (Morris). *New York Med. Journ.*, May 23rd, 1908.

The publication of a Report by the Burlington Commission at the instance of the National Society for the Improvement of the Condition of the Poor in America affords to Dr. Morris Koshet the opportunity of making some wise and timely observations on the rightful use of the results of enquiry into the extent of disease which have been arrived at by statistical methods. He shrewdly observes that the figures as presented in the Report and without qualification tend rather to terrify than to instruct, and he subjects each group of statistics to a scientific analysis of underlying causes.

The conclusion he draws is that such enumerations should be supplemented, and the attention of the medical, as well as the lay, mind should not be directed by them as they stand from the permanent harmful social environment in which it is impossible for healthy growth to take place. The enumeration of ultimate deficiency of individual growth may make us forget the soil in watching the plant. At a time when the statistical method is used by some to teach that "stock" is everything and that surrounding circumstances are of comparatively little importance, the observations and criticisms of Dr. Koshet are of more than a little interest. Statistical methods seem to speak with such a finality that we constantly need to remind ourselves that they only afford an abstract of what has already been observed. With fresh, and more discriminating, methods of observation, the finality of one set of statistics is frequently impaired. When we have measured the immense mass of physical imperfection and deterioration that exists in the population of a large city, we have to carefully criticise and examine each item in detail in order to unravel the multiplicity of causes. We may then know more fully how far it is due to irrevocable conditions pent up within the child at birth, and how far it is due to harmful, but alterable, conditions surrounding growth which it is the duty of the community to examine and remove and so allow the "stock" to manifest its better qualities.

Alfred A. Mumford.

Surgery.

REVIEW OF SOME RECENT CONTRIBUTIONS TO THE SURGERY OF THE BLOOD VESSELS AND OF THE THORACIC DUCT.

by

P. R. Cooper, M.D., B.Sc. (Lond.), F.R.C.S. (Eng.).

The Technique of Direct Transfusion of Blood.

Crile (G.). *Annals of Surg.*, 1907, vol. xlvi, p. 329.

This writer, in conjunction with several co-workers, has performed 225 experimental transfusions on animals and operated in 32 clinical cases. The method chiefly adopted was to unite the radial artery of the donor to the proximal end of any superficial vein of the arm of the recipient, by means of an "anastomosis tube," not unlike a Murphy button, invented by Dr. S. J. Mixter.* By means of this tube intima is brought into contact with intima alone, without damage to this structure and without the possibility of any foreign body reaching the blood stream and hence the risk of clotting is eliminated. The technique used is as follows: unless contra-indicated donor and recipient are each given a hypodermic injection of morphine 20 minutes before operation. The arms are prepared, and a towel placed over the eyes. The donor is placed on an operating table of the Trendelenburg type, so that should he faint the head can be quickly lowered. The recipient is also placed on a table with his head in the opposite direction to the donor. Under infiltration anæsthesia of ·1% cocain, about 3 c.m. of the radial artery is exposed, and the smaller branches are tied with fine silk; a "Crile" clamp is applied to the proximal end of the artery and the distal end is ligatured; the artery is then divided; the adventitia is pulled over the free end as far as possible and closely snipped off; a moist saline sponge now covers this field.

3 or 4 c.m. of the recipient's vein is then likewise freed; the distal part ligatured, the proximal closed with a "Crile" clamp, the distal part is divided with scissors, the adventitia drawn out as far as possible and closely snipped off.

The vessels are then inspected and the special short grooved cannula whose bore is slightly larger than the actual thickness of the vein or artery is selected; the vein is then pushed through

* This consists of a short cannula, doubly grooved transversely, and provided with a short bent handle at its broader end.

this tube, after which the freed end is turned back like a cuff and snugly tied in the second groove. During this time the "handle" of the cannula is held by forceps. The artery is now drawn over the vein and snugly tied with a small linen ligature over the first groove.

The clamp is removed from the vein, and afterwards gradually from the artery, when the blood stream will pass from the artery to the vein. Warm saline solution should be kept applied externally to avoid contraction of the artery. It is best to introduce the blood slowly, carefully watching the result so as to avoid overcharging the pulmonary circulation. The blood lost by the donor is generally regained in 4 to 5 days.

Arteriovenous Anastomosis.

TORRANCE (G.). *Annals of Surg.*, 1907; vol. xlvi, p. 333.

THIS is an account of a case in which the writer united the proximal end of the anterior tibial artery to the distal end of the long saphenous vein in operating for resection of the ankle joint for a severe crush in which both these vessels were severed, and there was reason to believe the posterior tibial vessels were also injured (no pulsation could be felt in the foot). The vessels were first resected so as to avoid the bruised parts. Two small silk ligatures were passed through the whole thickness of the artery on opposite sides and then down into the lumen of the vein for about $\frac{1}{4}$ in and then out through the wall of the vein, and, when drawn tight and tied, invaginated the artery into the vein. The end of the vein was sutured to the artery by a continuous silk suture. This stopped all leakage. The wound was packed with gauze and the sutured vessel covered with a flap of flesh. The foot was put under a constant drip of carbolic acid $\frac{1}{2}\%$, and kept warm with a hot water bag. Next day the foot was warm and normal in appearance. Sensation normal. Although the vessels subsequently sloughed the writer considers that they probably supplied blood to the foot for two weeks until a new collateral circulation was established.

Ligation of the Ductus Arteriosus.

MUNRO (J. C.). *Annals of Surg.*, 1907, vol. xlvi, p. 335.

THE writer suggests that this operation would be both feasible and justifiable in cases of persistent ductus arteriosus, especially where there existed marked circulatory disturbances and evidences of impending death from atelectasis, etc. The operation proposed, and demonstrated on the cadaver, is as follows: The sternum is split along its centre or a little to the right, opposite the second costal cartilage. This is done with a knife. The sternal halves are then retracted, ample room for working being obtained. The right pleural cavity will probably be

opened but not the left (if necessary the physiologist's apparatus for maintaining artificial respiration could be employed but would probably not be needed). After retracting the thymus upwards, the pericardium is exposed. Its reflection lies so high on the large vessels that the ductus to all intents and purposes is intrapericardial. In the upper angle the aorta will be seen on the patient's right and the pulmonary artery on the left. By following close to the aorta towards the under surface of the arch the ductus, as large as the aorta itself, will be seen as the first vessel to the left pointing upwards and a little to the right. Both pulmonary branches lie too far posteriorly to be seen, and by keeping close to the aorta the main pulmonary trunk will escape injury. On pushing through the tissues by blunt dissection the ductus, theoretically, should be easily surrounded with a ligature. It is a question whether or not simply crushing it would not accomplish as much, and in case of necessity it would be worth trying. After closing the anterior pericardial wound the sternum can be sutured or not and the skin closed.

Arteriotomy for Thrombosis and Embolism.

STEWART (F. F.). *Annals of Surg.*, 1907, vol. xlvi, p. 339.

THIS writer reports two cases in which arteriotomy, with removal of clot from the lumen of the vessel and subsequent suture of the artery were performed for thrombosis and embolism respectively. In neither case, unfortunately, was he successful in averting gangrene of the limb, as, despite all efforts, the thrombosis quickly reformed. Great difficulty was encountered in locating the obstruction, as the thrombus could not be felt. The writer points out, however, that the symptoms are caused not so much by the thrombus or embolus itself as by the results of arterial obliteration, viz., anæmia, pain, etc., referred to the area from which the blood is excluded. It has now been shown that the operations of thrombectomy and embolectomy can be readily performed without danger of secondary hæmorrhage, and the writer considers them indicated particularly when the intima is smooth; but to be of value operation must be performed as soon as possible after the arterial obstruction develops. Even though the vessel again becomes obstructed with clot, this may form slowly and so give the collateral vessels a chance to dilate, thus saving at least a portion of the limb.

Technique of Bloodvessel Suture.

SWEET (J. E.). *Annals of Surg.*, vol. xlvi., p. 335.

THE method favoured by the writer is exact end-to-end approximation of the divided edges of the vessel.

Fine silk is the suture material used, the size being carefully chosen so that it will completely fill the hole made by the needle.

The needles are of the smallest possible size, round, either straight or curved.

The stitches include *all* the coats of the vessel.

The exposed vessel is gently clamped,—Herrick's device being the best. The loose connective tissue of the external coat is then dissected away, drawing it down over the cut end of the vessel and snipping if off even with the vessel end, its subsequent retraction leaving the vessel free.

All injury to the vessel wall, such as grasping it with forceps, etc., must be strictly avoided.

A sharp knife and not scissors should be used to freshen or resect crushed or damaged wall.

The " tension sutures " of fine silk, impregnated with vaseline, are formed at equidistant points of the circumference of the vessel ends.

An assistant applies traction to two of these guide sutures in turn, stretching the portion between the two sutures into a straight line, to facilitate the application of the *continuous suture* and prevent narrowing of the lumen. The separate stitches which are laid very close together, should be drawn just tightly enough to secure absolute approximation, but not too tightly lest the tissues be everted. After completion of the suture and removal of the clamps should hæmorrhage occur a few interrupted stitches may be passed.

Endo-Aneurysmorrhaphy (Matas).

Frazier (C. H.). *Annals of Surg.*, vol. xlvi., p. 358.

This is an account of two operations, one for popliteal, and one for femoral aneurysm, by Matas' method. In the first case a completely satisfactory result was obtained, and " at no time was there any cause for apprehension as regards the vitality of the limb below the seat of operation,"—the writer remarking that he was surprised with the comparative simplicity of the procedure from the technical standpoint. In the second case, however, although the patient ultimately recovered, gangrene of the limb followed, necessitating amputation. Owing to the severe hæmorrhage which occurred on opening the aneurysmal sac, it was found necessary to close some of the collateral openings, and this was no doubt the cause of the gangrene. The writer believes that had a reconstructive rather than an obliteration type of operation been employed gangrene would not have ensued.

Endo-Aneurysmorrhaphy (Matas).

Gibbon (J. H.). *Annals of Surg.*, 1907, vol. xlvii., p. 366.

This writer reports his second case of operation for popliteal aneurysm, and has collected records of four other recent cases of operation by Matas' method, since Matas last paper, in 1906, dealing with 34 cases.

Of the five cases now reported upon two were "reconstructive," both being followed by good recoveries without complications, one was a "restorative" operation with an equally good result, two were "obliterative," in one gangrene occurred, in the second, although the patient was in a bad condition from chronic Bright's disease, and died on the 59th day from uræmia, the wound was practically healed and the œdema of the limb had disappeared. Reference is also made to Goyane's successful case of transplanting a section of the popliteal vein to bridge the defect of the artery after removal of the aneurysmal portion.

Endo-Aneurysmorrhaphy (Matas) in the Treatment of Traumatic Aneurysm of the Femoral Artery.

ELDER (J. M.). *Annals of Surg.*, 1908, vol. xlvii., p. 261.

IN a healthy boy, aged 10, an aneurysm, about the size of a tangerine orange, had formed, on the inner side of the thigh, about one month after an injury, which had evidently implicated the femoral artery. The usual signs of aneurysm were present, and as the tumour was increasing in size, and causing great pain, operation was performed. An Esmarck bandage being applied above, a vertical incision three inches long was made over the tumour, the capsule exposed, opened, and the contents, consisting of thick, dark, blood-clot (about 4 ozs.) turned out. The artery was found at the bottom of the sac, and in the vessel wall was an oval opening $\frac{1}{2} \times \frac{1}{4}$ c.m. Bright red blood spurted through this opening when the tension of the Esmarck was relieved. As soon as the parts were quite dry this opening was closed by three sutures of fine silk, a small round, curved needle being used, and care taken to include the intima in the sutures. The Esmarck was relaxed and the pulsation of the artery watched for some minutes to ensure that the sutures were sufficient to control all hæmorrhage. The lining of the sac was irrigated with sterile water, and iodoform gauze drain inserted, and the wound closed. The drain was removed in 48 hours and primary healing resulted. The boy has since had no trouble.

Transfusion and Arterial Anastomosis.

OTTENBERG (R.). *Annals of Surg.*, 1908, vol. xlvii., p. 486.

IN this paper the writer records some experiments in arterial anastomosis and presents a study of transfusion with two clinical cases. His technique for arterial anastomosis is somewhat similar to that of Crile, a small silver ring with two grooves on its surface being used to facilitate the "cuffing" and adjusting of the vessel ends, but silver wire is used in preference to silk for the suturing. The points upon which special stress is laid

are :—(1) The vessels must be handled with the greatest possible gentleness, and must never be grasped with toothed forceps. The best instrument for the purpose being a "curved foreign body forceps." (2) The part to be cuffed back must be prepared by carefully cleaning off adherent connective tissue. This is best done by pulling the connective tissue sheath over the cut end and snipping it off with scissors. On the end which is to surround the cuff it is best to leave considerable connective tissue. (3) Throughout the procedure the vessels must be kept moist with normal saline solution. (4) About 1 inch of the vessel to be cuffed and about ½ inch of vessel to be pulled over the cuff, is all that need be exposed. If branches cannot be avoided, they must be tied close to the vessel with fine silk. (5) The ring must be of exactly the right size; if one vessel be larger than the other the ring should be put on the smaller one. (6) There must be no tension. (7) The part operated upon must as far as possible be immobilised after operation. (8) The best means of temporary hæmostasis is the use of Billroth's hare-lip clamps, well protected with soft rubber tubing. (9) Should the muscular sheath of the vessel contract so as to render the procedure difficult, the muscle may be made to relax with hot saline solution, or the lumen may be gently dilated with small hæmostatic forceps. (10) Absolute asepsis is essential.

The clinical cases in which transfusion was performed were both desperate cases of secondary anæmia.

The Surgery of the Thoracic Duct.

Forest (H. P. De). *Annals of Surg.*, 1907, vol. xlvi., p. 705.

This is a review of the present state of our knowledge of the surgery of the thoracic duct, based largely on the memoirs of v. Graff and Unterberger. The following are the conclusions stated :—(1) The thoracic duct probably has collateral branches always which are able, in case of accident, to perform the function of the main duct. (Further anatomical investigations concerning this are greatly to be desired.)

(2) The sudden closure of the duct in man has had as its result only transitory disturbance in the nutrition of the body.

(3) Chylorrhœa occurring after a wound of the duct, must, if possible, be immediately controlled.

(4) The wounded thoracic duct may be treated precisely as we would treat a wounded blood vessel.

(5) Suture is the ideal method. If it is technically possible its use is to be preferred since the duct then remains patent.

(6) In all cases in which suture cannot be performed, a ligature should be applied. If ligature be technically impossible then in order of value suture of the tissue (Umstechung) comes next, then application of clamps, lastly, and in emergency, tamponading.

On Talma's Operation.

Lieblein (V.). *Prager med. Wock.*, 1908, No. 2.

The history of the operative treatment of ascites accompanying cirrhosis of the liver is briefly reviewed. The compensatory circulation and its influence upon the ascites was referred to by Küssner as far back as 1877, who failed however to make any practical deductions. The first successful operations were done, at the instance of Talma (Utrecht) and Drummond (Newcastle-on-Tyne), in 1896 and 1898 by Eiselsberg, Narath, and Morison. In spite however of adequate theoretical and experimental grounds, opinion is still divided as to the value of the operation.

The writer has operated on 15 cases of cirrhosis. Three of these however had only an exploratory laparotomy; in one the omentum was already adherent, in another it was shrivelled up, and in the third the liver and spleen were adherent to the parieties and the omentum shrunken to a few threads. In the 12 remaining cases Talma's operation or one of its modifications was carried out, the procedure being as follows:—

Omentofixation with suprapubic drainage—3 cases.
Omentofixation and fixation of part of omentum between liver and diaphragm—1 case.
Omentofixation without drainage—4 cases.
Extraperitoneal fixation of omentum between parietal peritoneum and muscles (Eiselsberg)—1 case.
Extraperitoneal fixation between anterior sheath of rectus and the skin (Narath's operation)—3 cases.

Results. Four cases were directly fatal from suppurative peritonitis. Two of these had been drained suprapubically, and the writer has consequently abandoned this practice since 1901. The other two had prolapse of bowel through the wound and died of infection, but were much reduced at the time of operation. It is hoped that such deplorable accidents will be avoided by abandoning suprapubic drainage and by more careful selection of cases. Another case died of pneumonia after leaving hospital.

Seven cases survived for a longer period. In 2 of these the operation was without effect; one (omentofixation) died in two months from cholæmia, and autopsy showed a gummatous hepatitis; the other (extraperitoneal) died of the disease in two months. Both required tapping after the operation. In one case (omentofixation with suprapubic drainage) there was freedom from ascites for six months. Another survived for three years but only lost her ascites a short time before death; she was, however, able to follow her occupation, and therefore had derived temporary benefit. In the 3 remaining cases ascites

remains absent up to date, namely, 22, 18 and 13 months respectively since operation. In two of these Narath's method was followed as also in the third, but in the latter the abdomen had to be re-opened for paralytic ileus, and intraperitoneal fixation was substituted to avoid the possibility of dragging on the bowel.

There were thus 3 cures *quâ* ascites or 25%, corresponding thus to the results of other operators and to general statistics (25 to 30%).

Discrepancies in the results of spontaneous and operative adhesions are probably due to dissimilarity in the etiology of the ascites. According to Thomson and Hale White, ascites when dependent upon cirrhosis as such is of bad prognosis; when due to chronic peritonitis and perihepatitis it may be cured by this operation, though equally well by tapping and exploratory laparotomy. According to Kretz results depend upon the state of the hepatic function.

Contraindications are severe icterus, marked urobilinuria, skin pigmentations, cardiac and renal complications, and acholia or hypercholia of the fæces.

As regards the question of early operation in the pre-ascitic stage, the writer doubts the propriety of such till its absolute safety has been established. As to method, he recommends Narath's procedure, which was followed in two of his successful cases. But for certain drawbacks splenopexy would be the ideal operation.

G. R. Mill.

Foreign Bodies in the Upper Part of the Œsophagus, with special reference to their removal by exposing the Œsophagus without opening it.

Thiemann (H.). *Arch. für klin. Chirurg,* Band. 85, Heft. 3, p. 772.

The majority of patients who have swallowed foreign bodies do not come to the surgical clinic as the bodies pass without much trouble, sometimes in a most surprising manner.

A case is cited of a patient who swallowed a watch and chain and key, a large spoon, and a bunch of keys besides numerous single keys, these gave rise to no trouble until the duodenum was reached when a laparotomy became necessary and death occurred from perforation of the duodenum.

Other foreign bodies prove of easy extraction by the coin-catcher or probang, so that the cases under consideration are rather rare, in fact v. Hacker had only seen 20 in 38 years.

Removal by the help of the œsophagoscope requires much practice and has not proved of much value in the hands of the author.

The method of extraction by exposing the œsophagus and removing the body without opening the tube was first recommended by Kramer and possesses the following advantages: the operation is much safer, for there is no risk of post-operative cellulitis and mediastinitis, it is shorter and easier to perform; there is no danger of the formation of a fistula or of cicatricial contraction in the œsophagus and the period of convalescence is much shortened.

Occasionally, of course, it is impossible to disentangle the body sufficiently to allow of extraction by the mouth, but usually this is astonishingly easy.

The method is of no value if the foreign body is below the superior thoracic aperture or if inflammatory changes have supervened in the vicinity.

Two successful cases are described and another one in which the method failed and œsophagotomy was required.

Two other cases of œsophagotomy are given which were performed before the publication of Kramer's method.

It is noteworthy that nearly all the patients were suffering from goître.

LAWRENCE JONES.

Malignant Tumours of the Spermatic Cord.

TEDENAT and MARTIN. *Arch. Générales de Chirurgie,* 1908, p. 113.

THIS article is suggested by the case of a man aged 66 who had observed a slowly increasing, nearly painless swelling at the site of the left inguinal external ring.

When seen by the authors it was of cartilaginous hardness, about the size of a thumb and divided into two parts by the ring; the testis and cord below this were unaffected.

The tumour was removed with some difficulty after dividing the external oblique, the chief dangers were its intimate relations to the iliac artery and to a loop of intestine.

After section it was obviously a tumour of the spermatic cord and microscopically fibro-sarcomatous in nature.

Beyond a slight degree of pain it had produced no symptoms.

The reports of 24 other examples of malignant tumour of the cord have been collected and from these the following observations are drawn.

They are nearly always of connective tissue, usually one or another form of sarcoma but sometimes they are "mixed tumours."

Their growth is often marked by a prolonged period of apparent innocence, suggesting a similarity to parotid tumours: they usually affect children, the direct symptoms are very slight,

the diagnosis provided the retro-peritoneal tissues are not affected is easy. The only treatment is castration, dividing the cord as high above the growth as possible.

Statistics are not sufficiently full to enable a final prognosis to be given: the immediate prognosis is good.

LAWRENCE JONES.

So-called Adenomata of the Palate.

LEGG (T. P.). *Practitioner,* p. 333.

IN 1886, Paget, in reporting 31 examples of palate tumour, drew attention to the fact that they closely resemble tumours of the salivary glands: both of these were said by Nasse in 1892 to be of endothelial origin; and Butlin considers that most innocent tumours are endotheliomata, that most, if not all, of the tumours at one time regarded as spheroidal-celled carcinomata are similar and that the same holds good in the case of large numbers of the "sarcomata."

The author has observed six tumours of this nature of which he gives the details.

They tend to affect the soft palate, may occur at any age, and cause remarkably little inconvenience; they vary much in the rapidity of growth, frequently after a latent period they enlarge suddenly.

They have definite capsules but owing to their friable caseous, or granular consistence, they often must be removed by scraping rather than by enucleation.

They do not tend to recur; one of the present series of patients whose growth was stated to be "typically cancerous in places" is now well, six years after operation.

In this respect they appear to differ somewhat from parotid tumours; there is never involvement or true ulceration of the overlying mucous membrane.

In all the sections the matrix is hyaline or myxomatous and sometimes very abundant; the cells are always arranged in alveoli, which may show no lumen, or the lumen may be circular, slit like, or branched; the cells themselves are spheroidal, columnar, or flattened.

LAWRENCE JONES.

The Treatment of Trophic Nerve Lesions.

QUINBY (WILLIAM C.). *Boston Medical and Surgical Journal,* clviii., 9, p. 281.

IT is now recognised that "trophic nerves" as formerly understood have no separate existence; the nutrition of a part depending entirely on its blood supply controlled by the vaso

motor system which is stimulated or the reverse by impulses from the sensori-motor nerves.

So that "trophic nerve lesions" of skin, bones, or joints are due to a break in the neuro-vascular mechanism of the part involved; this break may be situated centrally as in erythro-melalgia, on the neural side as in division of the ulnar nerve, or on the vascular side as in Volkmann's contracture.

Hence treatment should be directed towards the modification of the blood supply or the nerve function of the part.

The former including methods causing hyperæmia or anæmia of the part; the latter consisting in nerve stretching, neurolysis, and nerve dissociation with electricity.

LAWRENCE JONES.

The Bennett Fracture of the Great Metacarpal Bone.

ROBINSON (S.). *Boston Medical and Surgical Journal*, vol. clviii., No. 9, p. 275.

THE basis of the paper is an accumulation of 92 cases of all fractures of the thumb metacarpal taken from a collection of skiagrams.

The fracture described by Bennett in 1881 as the typical one, was through the base of the metacarpal and oblique, the large upper fragment being so displaced as to resemble a backward dislocation; this is shown by the author not to be the commonest form when a series of skiagrams are examined, in fact only 30 % are of this nature., 6 % are fractures near the distal end, and 64 % are fractures near the base without the involvement of the joint and the subluxation essential for Bennett's fracture.

The fracture under consideration is easily missed if a skiagram be not taken, and the author recommends the following treatment.

Two strips of adhesive strapping are fixed on the dorsal and palmar surfaces of the thumb, over which a loose dressing of wool is applied; a plaster of paris spica is now put on between which and the wool two narrow wooden splints are placed to prevent the plaster from being tight and which after the plaster has hardened are withdrawn from the open end of the spica which projects beyond the tip of the thumb; while the plaster is hardening extension is kept up on the strapping and an extra layer of plaster is put on for security; finally the strapping is turned over the spica and fixed by a circular turn of strapping.

LAWRENCE JONES.

Testicular Adenoma.

CHEVASSU (M.). *Archives Générales de Chirurgie*, 1908, p. 127.

THE author defends what he has previously stated against the opinions of Branca and Basseta, who assert that what he

describes as adenomatous acini are really seminiferous tubules in process of development, and that the testicle is not a true gland, nor can spermatazoa be regarded as a real secretion.

He quotes from the original article:—"The adenoma is made up of masses of small tubules three or four times as small as the neighbouring seminiferous tubules, like them very tortuous and forming small lobes contrasting strongly with testicular tissue."

In studying the series of ectopic testes described by his opponents he can find nothing resembling what he would call an adenoma.

He describes an extremely interesting case of a woman, aged 35, whose abdomen he opened for a large abdominal tumour which was found to be a carcinomatous testis, the ovary, tubes and uterus being absent. The other testis partly descended, showed on section several nodules supposed to be carcinomatous, but proving to be adenomata; these presented all the characters of adenoma, on which he insists, definite capsule, flattening of the surrounding tubules, small acini packed with cells and a definite difference in colour from the remaining testis.

LAWRENCE JONES.

Grafting of Fibula to Tibia.

STONEY (R. ATKINSON). *The Medical Press,* February, 1908.

THE patient, a boy, aged 7 years, suffered from acute osteomyelitis of the left tibia in November, 1904. Sequestra were removed on several occasions, and in April, 1906, the limb was soundly healed, two inches shorter than the right leg, and there was a gap in the tibia two inches below the knee. The neck of the fibula was divided and the lower end was implanted into the head of the tibia and fixed with wire. Firm union occurred in about ten months, and the limb has since grown at the same rate as its fellow of the opposite side.

The article is accompanied by skiagrams, which show excellently the condition of the bone in various stages of the case, the last one illustrating very well the hypertrophy which the fibula undergoes after transplantation.

GARNETT WRIGHT.

Notes on the Treatment of Acute Inflammations by Bier's Method of Passive Congestion.

WOODWARD (CHARLES). *Birmingham Medical Review,* February, 1908.

THE author states that this method of treatment aims at concentrating the efforts of the body against the invading micro-organisms by increasing the amount of blood flowing through

the part. He discusses the technique, and advocates the use of a very thin rubber bandage, as delicate adjustment is thereby facilitated. The bandage must be sufficiently tight to constrict the superficial veins only. The pulse below must not be interfered with, pain must be diminished, and the colour of the limb below must be a bluish-red. The bandage should be applied for 22 hours in the 24, and in the intervals search should be made for softening areas, pus being evacuated as soon as it forms. In a few days the length of application should be diminished, until it is no longer necessary to apply the bandage. Details of three cases treated in this way are given.

GARNETT WRIGHT.

The Treatment of Blood Effusions of the Knee-joint by aspiration, immediate movements, and the application of the method of exercises against increasing resistance.

ROCHARD (E.) and DE CHAMPTASSIN. *Bulletin Général de Thérapeutique*, February, 1908.

THE authors base their treatment on the behaviour of normal muscles which are exercised against increasing resistance. They show that in such circumstances a muscle hypertrophies and the hypertrophy persists so long as the exercises are continued, but disappears when they are stopped. They conceived the idea of applying this principle to the atrophied muscles which so often result from joint injuries, especially the quadriceps extensor cruris in injuries of the knee-joint. The joint is aspirated at once and the movements are commenced on the next day; the thigh being fixed to the bed, the patient is made to straighten the knee while graduated weights are fixed to the foot. In this way, they claim, there is a rapid return to the normal in the affected muscle. The treatment equally applies to old-standing cases, which have failed to respond to massage and electricity, the authors stating that a rapid recovery will take place with exercises against resistance.

GARNETT WRIGHT.

Carcinoma of the Breast: Its Early Recognition and Treatment.

JOCELYN SWAN (R. H.). *The Clinical Journal*, March 4th, 1908.

IN this article the diagnosis and clinical signs are discussed at length, the author stating that he places most reliance on the hardness of the tumour, the immobility in the mammary tissues and the dimpling of the skin over it. Exploratory incision is strongly advocated in all doubtful cases, the complete operation being performed immediately should the tumour prove

malignant. Due care is to be taken to prevent inoculation of the wound by changing gloves and using fresh instruments. In the radical operation both pectoral muscles are removed as a routine, and the incision is carried down on the arm between the pectoralis major and the deltoid, so that the subsequent scar will not run into the axilla and interfere with movements. The author considers, in view of Handley's work, that it is essential to remove the fascia over the upper part of the rectus abdominis muscle.

GARNETT WRIGHT.

Remarks on Empyema, based on a series of one hundred consecutive cases.

MORISON (Albert E.). *Edinburgh Medical Journal*, 1908.

THE causes of the empyema in the hundred cases were as follows: Pleuro-pneumonia in 91 cases, pleurisy in 4 cases, tuberculous disease of the lungs in 3 cases, perforated duodenal ulcer in 1 case, and necrosis of a rib in 1 case. The diagnosis is fully discussed, and the necessity of the use of the exploring syringe in all doubtful cases is insisted upon. The prognosis is good, only three of the cases terminating fatally, the deaths in those cases being due to complications. Spontaneous endings were seen in several cases. In one case the empyema became absorbed, in two cases the empyema was evacuated through a bronchus, and recovery ensued. "Empyema necessitatis" occurred in five of the cases; in four of these Estlander's operation was necessary. The fifth case recovered after establishment of a counter-opening. The treatment recommended is incision of the pleural cavity in the sixth interspace, just in front of the posterior axillary line. Resection of a rib is regarded as unnecessary in the majority of cases. The period of drainage is regulated by the amount of discharge, irrigation is avoided and gymnastic exercises are persevered in to prevent deformity. Estlander's operation proved necessary only in four neglected cases.

GARNETT WRIGHT.

Some of the Reasons why Cholecystectomy should not be performed as frequently as is advocated by many surgeons.

DEAVER (JOHN B.). *American Journal of Medical Science*, 1908.

THE functions of the gall-bladder are to act as a reservoir for the bile and as a tension bulb for the biliary passages by which the vis a tergo of the bile stream is equalised. The gall-bladder is a most useful organ by means of which in septic conditions of the

liver and gall-bladder and in chronic pancreatitis a cholecystenterostomy gives a permanent drainage whereas if the gall-bladder has already been excised a choledocho-enterostomy is a most difficult feat.

In the absence of the gall-bladder and in the presence of an hepatic emergency the surgeon will be obliged to drain either the common duct or the hepatic duct. Each of these will tax the skill of the expert abdominal surgeon. Many surgeons assert that after cholecystectomy sufficient drainage takes place through the choledochus into the duodenum, but to drain one infected organ into another appears unsurgical in the extreme. To emphasise this point Deaver states that in a condition of pyelonephritis a nephrotomy is performed, and surgeons are not content with the drainage afforded through the ureter into a bladder which was probably the original seat of the disease.

In addition to the question of drainage the mortality from drainage is less than in cholecystectomy. And here the remote as well as the immediate mortality is to be considered; this includes peritonitis from spreading infection, hæmorrhage which kills within two or three days, increased shock from manipulations, the extra strain upon already toxic kidneys.

In the author's experience post-operative adhesions are more frequent after cholecystectomy, as in many cases it is impossible to cover all the exposed surfaces with peritoneum. He believes that the recurrence of stone as an objection to cholecystostomy is of no moment. The chief objection to the conservative operation is the occurrence of fistula. Fistulæ are either mucous or biliary. Mucous fistula is the result of obstruction of the cystic duct and usually requires cholecystectomy. Biliary fistulæ can usually be closed by freeing the fundus of the gall-bladder and turning in the edges. Occasionally a cholecysto-duodenostomy has been necessary, but rarely a cholecystectomy.

Deaver gives the following indication for cholecystectomy:

1. Hydrops of the gall-bladder where the cystic duct is usually obliterated.
2. Cancer or other new growths limited to the gall-bladder.
3. Calcareous degeneration or fibrosis of the gall-bladder.
4. Chronic empyema, while in acute empyema drainage may suffice.
5. Gangrene and perforation of the gall-bladder. It may even here be wiser to drain first and excise later. When the fundus only is diseased it should be resected and drainage adopted.
6. When there are many small stones, all of which cannot be removed, owing to their being embedded in the mucous membrane.

P. R. Wrigley.

Perforation of the Gall-bladder during Typhoid Fever: Cholecystectomy: Recovery.

Ashhurst (A. P. C.). *American Journal of Medical Science.*

In the above article Ashhurst reports two cases of perforation of the gall-bladder during typhoid fever.

The first case was a boy aged 12 years, where perforation occurred on the thirty-second day of typhoid fever. An exploratory laparotomy was done, but had to be abandoned before the lesion was found, owing to the patient's critical condition. Post-mortem showed general peritonitis with a perforation of the gall-bladder.

The second case, which was under the care of the author himself, was a man twenty years of age, in which acute abdominal symptoms limited to the right upper abdominal quadrant set in on the forty-second day of the disease. A diagnosis of perforation of the gall-bladder was made, and four hours after the occurrence laparotomy was performed. A perforation $1\frac{1}{4}$ inches by $1\frac{1}{2}$ inches was found on the lower and inner wall of the gall-bladder. The gall-bladder was excised and the wound drained by a tube and gauze. Recovery was uneventful, and seven months later the patient was in sound health. A culture taken at the time of the operation showed a pure growth of typhoid bacilli. To this in part is be attributed the excellent recovery.

The author has collected 21 operations performed for lesions of the gall-bladder during the course of typhoid fever. In this series there were eight recoveries and 13 deaths; but in four of the fatal cases the operation was abandoned before the lesion was found owing to the dangerous condition of the patient. If these are excluded we have an operation mortality of less than 53 per cent. Out of the 21 cases reported a correct diagnosis was made in 11; in nine cases a diagnosis of intestinal perforation was made and in one case the only diagnosis was peritonitis.

From the above series there would appear to be two distinct classes of cases:—

1. A more or less gradual onset of abdominal pain localised to the right hypochondrium, local tenderness and frequently a palpable mass easily recognised as a distended gall-bladder. If operation is undertaken at this stage there has been found (*a*) cholecystitis; (*b*) empyema; or (*c*) empyema and commencing suppurative pericholecystitis.

2. The symptoms above mentioned have been present for a few hours to some days, when suddenly an acute attack of abdominal pain occurs with a fall in temperature, these signs being followed, if operation is not performed, by a rise of temperature, increase in pain and tenderness over the whole abdomen and an increasing distension of the intestines.

P. R. Wrigley.

Scoliosis and Nutrition in Adolescents.

HUTINEL. *Gazette des Hôpitaux*, 1908, No. 12.

THE writer contends that scoliosis is not a local affection, but depends upon a disturbance of nutrition, of which traces will be found in most of the organs. Faulty attitudes and such like are merely contributory causes. He agrees with Kirmisson's opinion referring it to a late rickets.

Besides the spinal deformity the chest may be narrow and ill-developed and the arms long and slender; the muscles, especially of the trunk, are feeble. Disturbances of organic functions may be present as follows:—

Circulatory troubles: blueness and coldness of the extremities, clammy hands, chilblains and acne, palpitation, and shortness of breath, fatigue and sometimes precordial distress on exertion. The heart's apex may be depressed in the vertical posture, especially in boys; hæmic bruits may be heard. Girls are often anæmic, sometimes chlorotic.

Digestive disturbances include gastric atony with ptosis or dilatation, constipation, often with colic and muco-membranous stools, contraction of the colon, accumulations in the cæcum, and even signs of chronic appendicitis. Gastralgia and nausea may be present. Appetite is irregular and digestion and assimilation defective. In nervous girls anorexia nervosa may develop.

The urine: cyclic albuminuria is frequently associated, especially amongst the rich where there is excess of nitrogenous food. The nitrogenous constituents are nearly always altered, uric acid being increased and urea diminished. There is often an increased deposition of phosphates.

The liver functions are sometimes impaired, *e.g.*, enlargement, sometimes slight icterus or indications of cholæmia. Catarrhal jaundice is not uncommon.

Respiration is often embarrassed. In some he has noted an enfeeblement of the vesicular murmur at the apices in the vertical position, disappearing on lying down. In these cases there were visceral ptosis and lowering of the diaphragm.

Nervous symptoms include headaches, defective cerebration, especially in boys, hysterical symptoms in girls. Menstrual troubles are frequent.

All these symptoms are referable to disorder of nutrition to which there is a special disposition at puberty. Chlorosis, orthostatic albuminuria and scoliosis may all be present at once, but are to be regarded rather as parallel results of nutritional disorder than as interdependent conditions. As regards the relations of tuberculosis, parental tuberculosis is predisposing to disturbances of nutrition in the offspring. Tuberculous infection

will favour the appearance of dystrophy, but is not essential. The subjects are rather open to tuberculous infection.

Therapeutical measures are chiefly hygienic and dietetic (orthopædic treatment not being under discussion). Friction, massage and hydrotherapy are useful in suitable cases. A milk diet should not be ordered on account of intermittent albuminuria. Excessive consumption of nitrogenous articles should be prevented. Simple medication is called for, phosphates, especially glycerophosphate of lime, iron, arsenic, and in severe cases cacodylate of soda hypodermically.

G. R. Mill.

Eighty Lumbar Anæsthesias without a Failure.

Holzbach (E.). *Muench. med. Woch.*, 1908, No. 3.

The series was consecutive and unselected. The writer attributes his success to the purity of the anæsthetic solution (mixture of stovain and suprarenin) and to the technique of the injection. Severe after-effects are due above all to the use of decomposed and altered solutions.

An hour and a half to half-an-hour before operation the patient receives 0·01 morphine and 0·0003 scopolamine; the latter is believed to have an important influence in the reduction of post-operative vomiting.

The apparatus comprises a graduated 5 c.c. syringe, two Krönig's needles, and a piece of narrow soft rubber tubing of a few centimetres length with connecting piece. The tubing prevents the transmission of movements of the hand to the needle after introduction. The apparatus is boiled and salt solution run through it. Separate solutions are used, the adrenalin being added to the stovain in the syringe; the adrenalin hydrochloric Höchst is the preparation employed.

The puncture is made with the patient sitting up in bed, preferably between the second and third lumbar and in the middle line. The hollow needle is introduced as far as the ligaments, the stylette withdrawn, the bayonet-top fixed to the tube and the needle pushed on into the subarachnoid space. If fluid escapes, 2–3 c.c. are allowed to run and the stovain mixture injected slowly through the tube during 3–4 minutes. The patient remains in this position for five minutes while the injected solution reaches the temperature of the fluid, then slowly laid back with the upper part of the body well raised. On the table care is taken to keep the head supported. At the end of disinfection the pelvis, if desired, is very gradually raised; only in two cases did this cause trouble—cold perspiration and retching, and in one slowing of the pulse. These effects are due to too rapid elevation, and with care can be avoided.

According to Krönig and Gauss, when once the raised pelvis position is assumed the stovain being of lower specific gravity at the body temperature, ascends towards the pelvis and further danger is averted. The dangers are therefore changes in the level of the fluid from rapid changes of position, and, as a result, gravitation of the poison to the vital centres. After operation the horizontal posture is again very gradually resumed. The afternoon, or at latest the day after operation, the patient may be allowed to sit up. No disturbances of urination nor after-symptoms due to absorption were observed.

All the cases were women—46 laparotomies, 7 vaginal cœliotomies, and 27 operations without opening of the peritoneum. The quantities injected ranged between 0·04 and 0·08 gramme stovain along with 0·0001 to 0·0002 suprarenin.

The duration of anæsthesia was either that of the operation or at least amounted to 60 minutes. In 14 cases the operation had to be completed under ether and the small amount of anæsthetic then required was striking.

All the writer's gynæcological operations are now done under lumbar anæsthesia unless this is absolutely excluded, as in two cases, one of which had lordosis and kyphoscoliosis, and the other complete ossification of the inter-vertebral ligaments.

G. R. Mill.

Congenital Talipes.

Fedden (W. F.). *Medical Press,* January, 1908.

The paper is concerned with equino-varus, though the principles of treatment are applicable to other forms. The successful treatment of congenital talipes must be conducted—(1) slowly and in stages, and (2) by working on the most distal parts to commence with. In equino-varus it is absolutely essential to correct the varus before dividing the tendo-achillis. Treatment should commence on the day of birth. In the first instance in all cases it should be manipulative, unless deformity is extremely marked. As this goes on taut structures become evident and call for division. Tenotomy should be carried out by stages with intervals of manipulative treatment. The tenotome is entered on the inner side of the foot and the tight bands divided from within outwards, the fingers making counter pressure on the outside. The foot is then corrected as far as possible by forcible manipulation and drawn by bandages and strapping to an outside splint. Only when the varus has been fully corrected should the tendo-Achillis be divided and the heel brought down.

In bad cases it is generally necessary to divide the anterior part of the internal lateral ligament and then forcibly evert the foot. The writer does not as a rule employ any retentive

apparatus at first, trusting to continued manipulation and the outside splint. In extreme cases where the above measures do not permit of correction of the varus, fixed bony deformity is almost certainly present, and perfect cure scarcely to be hoped for. If the child be young scraping out the ossification centre of the astragalus is probably the best measure. He does not favour excision of the astragalus or wedge resection from the outer side. Prolonged personal supervision and the services of an intelligent nurse are necessary, especially in view of the tendency to recurrence of the deformity.

G. R. Mill.

A Case of Dislocated Spleen: with Operation.

Blackburn and Craig. *Austral. Med. Gazette,* December, 1907.

The patient, a girl of 17, was operated upon on a diagnosis of appendix abscess. She was seized with severe pain in the lower abdomen when at work four days before admission; there had been no vomiting, and the bowels had acted well. The right iliac region was motionless, rigid, tender, and dull on percussion, and on vaginal examination a mass was felt in front and to the right pushing the uterus backwards.

Blood-stained fluid escaped on opening the peritoneum; the spleen was greatly engorged and the serous coat had ruptured in places, but there was no torsion of the pedicle. Adhesions to the pelvic organ were freed, and the spleen replaced in its normal situation and kept in place with pads and a firm bandage. A month later the organ was still double the normal size and could be moved down to the umbilicus. Thirteen months later it was shrunk to half its natural size and fixed midway between the normal situation and the umbilicus. The case was most probably one of congenital dislocation.

G. R. Mill.

Pathology.

Live Staining of Spirochæta Pallida.

MANDELBAUM (M.). *Münch. med. Wochen.*, Nov. 12, 1907.

A hanging drop of serum from a primary sore or discharging papule is placed on a cover glass; a small quantity of Lœffler's methyl blue is added to it, to mix with it, and a drop of 10% normal saline solution is added to the whole. With oil immersion objective the S. pallida can be plainly seen at the edge of the hanging drop and distinguished from the S. refringens by its paler colouring. What have been taken as nuclei are really spots of intensification of colour by overlying of coils of spiral. Movements can be distinguished. By ringing with wax, the spirochætae will be preserved for weeks, but the movements cease in 24 hours.

J. M. BERNSTEIN.

Bacteriology of Congenital Syphilis.

BAB (DR. HANS). *Münch. med. Woch.*, Nov. 12, 1907.

DR. BAB found in several cases of congenital syphilis the spirochæta pallida in large quantities, or else the products of these bodies, so as to strengthen their position as causative agents in syphilis.

First in an infant born apparently healthy but which died 5 weeks after birth, of osteochondritis syphilitica, hepatitis parenchymatosa, heart gummata, enteritis hæmorrhagica. In the liver and spleen were found isolated spirochetes, more numerous in the testicles, but in the ossifying cartilage of the epiphyses they were found in large masses.

In another case, where the infant lived only 2 minutes, he found very large quantities in the ovaries, where, in the newborn, there are neither to be found nerve fibres or elastic fibres, shewing that he had to do with a true organism.

In cases where there were no organisms to be found, he gives various theories to explain their absence, one being that the fœtus receives the toxin from the mother; or again the toxin gets as far as the placenta, and damages the circulation there to such an extent as to produce suffocation of the fœtus. In a case of a fœtus with congenital universal œdema, neither could he find any spirochætes in any of the organs or in the placenta,

nor was there any toxin in any of the organ extracts. But the ascitic fluid shewed the presence of antibodies. Dr. Bab concludes that these cases help to shew the probability of the S. pallida being the exciting cause of the disease, but that the reactively formed antibodies may cause the disappearance of the spirochætes as well as the toxin produced by them.

He gives a résumé of 50 cases of congenital syphilis bacteriologically—microscopically as well as biologically—investigated.

J. M. Bernstein.

The Relation of B. Typhosus and Paratyphosus to the Bile Ducts.

Forster (Strassburg). *Münch. med. Woch.*, January 7, 1908.

Dr. Forster here sums up work done by Chiari, Fluttéres, and others,—mostly in his own Institute, and adds observations and conclusions of his own.

Typhoid bacilli are regularly discharged into the intestine with the bile: they are passed into the bile from the liver and are able to settle in the gall-bladder and propagate there.

The author, from the observation of the presence of typhoid bacilli in the blood of patients, even in the incubation period, concludes that the bacillus does not develop in the intestinal canal but first finds its way into the interior of the body and there multiplies. Then either before, or along with, or immediately after the appearance of symptoms the bacilli pass into the liver and bile and so into the gall-bladder. Hence the irregularity in the appearance of the typhoid bacilli in stools, except in the later stages when the typhoid ulcers form.

The bacilli can maintain themselves in the gall-bladder and multiply, but whilst in the normal bile they do not live, they are able to do so when there are present small quantities of albuminoid material and serum—such substances as come from inflamed tissues.

The action of the bacilli on the mucous membrane of the bile passage produces inflammation and so the bile gets the proper admixture of albuminoid material.

After recovery the infected remains of bile in the gall-bladder, being mixed with fresh quantities of bile, the gall-bladder becomes a nursery for typhoid bacilli. Thus patients become typhoid bacilli carriers.

The majority of patients remain bacilli carriers for only a short time—a few weeks. But a certain number— 2 per cent. were *lasting* typhoid carriers—some even as long as 20 years. Of these 79 % were women, 17 % men, and 4 % children.

The proportion that exists here between the sexes, the author

points out, is the same as has been shown to exist amongst those who suffer from gall-stones: and further that of those who suffer from gall-stones 90 % show no symptoms at all.

The author, therefore, considers there is a strong connexion between the typhoid bacilli and the formation of gall-stones, the presence of the bacilli in the gall-bladder being primary.

These bacilli carriers become the source of infections and the author in 386 cases of typhoid found 77 due to infection from bacilli carriers. Thus are explained sundry sporadic outbreaks, the existence of "typhoid houses" and epidemics as well as endemic appearance of typhoid.

To put a stop to this source of the spread of typhoid hygienic measures are necessary:

1. To find out the bacilli carriers—who are more or less apparently well; especially amongst those who suffer from biliary trouble. If possible they should be isolated and every precaution taken.

2. Operative treatment for gall-stones and the healing of the gall-bladder puts a stop to the condition. Otherwise the various therapeutic measures employed by the author have not been so far successful.

J. M. Bernstein.

On the Excretion of Hexamethylenamin (Urotropin) in the Bile and Pancreatic Juice.

Crowe (S. J.). *Johns Hospital Bulletin,* April, 1908.

This investigation was undertaken with a view to finding some drug which might be of use in disinfecting the biliary system of a chronic carrier of typhoid bacilli, and urotropin was chosen because it is already in common use during typhoid fever in cases in which bacilluria occurs, and because it is a drug the presence of which can readily be determined chemically. As the result of preliminary observations on dogs and later investigations on subjects with a biliary fistula the writer found that hexamethylenamine appears in the bile and pancreatic juice in dogs, after administration by mouth. It finds its way into the bile both through the liver and through the wall of the gall-bladder.

It has also been demonstrated in the bile, cerebrospinal fluid, synovial fluid, saliva, pleural effusion, and blood of man; and when given in sufficiently large doses (75 grains a day) it appears in the bile in quantities which exercise a decided bactericidal action.

E. M. Brockbank.

Therapeutics.

Orthopædic Therapy during the Early Stages of Acute Anterior Poliomyelitis.

Nutt (J. J.). *New York Med. Jour.*, February, 1908.

Proper and painstaking orthopædic treatment instituted during the more acute stage will greatly lessen the extent of crippling and in some cases effect a complete cure. By the early stages the writer means the period antecedent to the cessation of spontaneous improvement, but he does not state how early the several measures may be commenced. Early treatment should be directed towards: (1) Keeping the parts in as healthy condition as possible; (2) preservation of the normal range of motion in all the joints; (3) preventing stretching and elongation of paralysed and weakened tissues.

1. For the first the means employed are massage, electricity, heat, and hydrotherapy. Massage must be thorough and scientific, friction alone is insufficient; each sitting should occupy ten to thirty minutes according to circumstances. If there is any response to the faradic current it may be used, otherwise the galvanic. The local temperature is best maintained by preventing loss of heat through conduction and radiation. Alternate hot and cold douches of sea salt solution are often highly beneficial, but prompt reaction must occur.

2. The second object is to be sought by passive movements, daily from the beginning of treatment. Muscle shortening begins within a very few weeks.

3. The paralysing effect of over-stretching is emphasized. The apparatus must be used with careful consideration of the age and activity of the child and the strength of the supporting structures of the joint. When muscles and joints are confined the brace should be removed twice daily, and passive and resisted active movements carried out. G. R. Mill.

The Electrical Treatment of Atonic Conditions of the Digestive System.

Morton (E. Reginald). *Lancet*, May 16th, 1908.

Probably atonic conditions of the stomach and intestine are met with more frequently in medical practice than any other type of case. As with all common complaints the methods of treatment adopted are numberless and many of the cases are unsatisfactory in spite of the practitioner's favourite remedies. Electrical treatment is yet one more shaft in our quiver and Dr. Morton maintains that the usual methods should be continued while the patient is undergoing treatment by electricity. These

cases are all chronic and we must not look for sensationally rapid improvement by this method any more than by any other—an atonic muscle cannot recover its tone rapidly.

He divides his cases of atonic dyspepsia and constipation into two classes: (1) those due to defective innervation, *i.e.*, neurosis, and (2) those of true atony of the muscular wall.

In the first class almost any form of electrical treatment applied either locally or generally will be of service and it is suggested that the moral effect is of considerable importance. Where the muscular tone, however, is at fault Dr. Morton finds that the usual currents employed are not of great value, the constant not being sufficiently stimulating while the Faradic, although useful in the hands of some operators, he does not hold in great esteem on account of the somewhat painful effect of even small currents and also that the rate of vibration is usually much too rapid to stimulate a muscle that is at all atonic. These cases are extremely obstinate to all forms of treatment and have usually taxed the resources of the practitioner to the uttermost and electrical treatment is, as usual, a last resort. While still undergoing the ordinary treatment by diet and drugs Dr. Morton strongly advocates the use of a sinusoidal current of very slow periodicity. The sinusoidal current is an alternating current first passing in one direction and then in the other, there being no sudden change of potential, the current being represented graphically by a continuous wavy line. A current of this character, whether single phase or tri-phase, is exceedingly well borne by patients and there is no fear of "burning" of skin or mucous membrane by electrolytic decomposition. Great stress is laid on the periodicity of the current which must be very slow, slow enough in fact to allow for what he calls the "periodic time" of the muscle which includes its period of contraction, relaxation and latent period.

The electrodes are placed on the epigastrium and on either side of the lumber spine in atonic dispepsia; if the colon is at fault the electrodes are over the course of the large intestine while if the rectum calls for treatment an electrode may be introduced locally, provided it is "covered with membrane and water jacketed so to speak."

Rapid improvement is not to be looked for and patients must be warned that patience will be necessary, but he states that great improvement both in the local and general health of the patient has taken place in every case where a fair trial has been given to the treatment.

In conclusion he points out that this slow sinusoidal current of large volume is of great value in any condition where muscles, are atonic or degenerate, whether they be voluntary or involuntary.

A. E. Barclay.

Reviews.

" Quain's Elements of Anatomy. By Dr. T. H. Bryce. 11th edition. Royal 8vo., 275 pages, 314 figs. Vol. I. Price 10s. 6d. net. London : Longmans Green & Co.

Vol. I. of the eleventh edition of Quain's Elements of Anatomy is devoted as in the case of the tenth edition to embryology, but since the tenth edition appeared the authorship has changed, Dr. T. H. Bryce taking Prof. Schäfer's place as author of this volume. The change of authorship has made no essential alteration in the general plan though the book has been re-written, and Dr. Bryce has incorporated all the main facts and opinions concerning embryological phenomena which have appeared since the last edition was published. He has also introduced many new illustrations. The book is therefore well up to date and the reader who is acquainted with the literature of the subject will find that Dr. Bryce has utilised all, except perhaps that which has been published within the last few months, and his own practical knowledge of the subject appears clearly in the crisp and lucid descriptions of those phenomena to which he has paid special attention and upon which he has written at length in other places.

The teacher who wishes to have at hand a synopsis of knowledge on the subject of embryology will welcome the volume on account of its general comprehensiveness, though he will soon find that it does not fulfill the intention expressed in the preface, that it should form a complete text-book of embryology, unless the term is used in a very limited sense, for it does not include an account of the time and mode of appearance of the ulci of the brain, the ossification of the bones, and the time of medullation of the tracts of white matter of the spinal cord and brain. On the other hand the medical student who takes up the book under the impression that, as it forms one of the volumes dealing with the *Elements* of Anatomy, it will enable him to see easily and quickly the main outlines of the subject, will discover either that a very wide and deep knowledge of embryology is an *element* of anatomy or that the elements of embryology include such abstruse knowledge, from a medical student's point of view, as a comprehension of the paraterminal body, the trapezoidal area and hippocampal formation and commissures of the brain. If, however, he will have a little patience and if he possesses some power of discrimination, he will be able to abstract from the mass of knowledge presented to him the big facts, to which he can add, subsequently, the more detailed information. To the teacher and the advanced student the book will undoubtedly be welcome on account of the large store of

information it contains, it will be less valuable to the junior student who will find much difficulty in following some of the descriptions, and it will be practically useless to anyone who is not well acquainted with anatomical terms.

"The Law in General Practice: Some chapters in every-day Forensic Medicine." By STANLEY B. ATKINSON, M.A., M.B. London: Henry Frowde, Hodder & Stoughton, Oxford University Press. Price 7s. 6d. net.

DR. Stanley Atkinson has written a book full of useful advice, not only for students but also for those who have been long in practice and may therefore be expected to be somewhat rusty if called upon to give evidence in a Court of Law. Excellent is the advice at the very beginning of the book that the general practitioner should never act in the capacity of the lawyer and clergyman and never become executor of a will or trustee of an estate. Many a harassed practitioner must surely wish that he had stuck to this golden rule. The special privileges and duties of the General Practitioner, how he should deal with threats or attempts at blackmail, how to deal clinically with all patients and especially with women are adequately and judiciously dealt with. There is an excellent chapter on Medical Evidence and Medical Witnesses followed by a similar chapter on Medical Certificates and Reports. The Law of Libel and Slander as affecting medical men either as plaintiffs or defendants is next discussed, but this chapter, although full and accurate, may not be quite easy to follow for one who has not had any legal training; to a smaller degree the same remarks may apply to the chapter on the Law of Negligence. Under the heading of abortion, it is stated that "In law, all methods of accelerating birth, or rather of preventing the normal continuance of pregnancy, are criminal abortion"; this statement is of course much too broad, as indeed immediately afterwards the author refers to the precautions to be taken by the medical practitioner during *legitimate* abortion. Many useful medico-legal hints are given on Drunkenness, Epilepsy, Anæsthesia, Hypnotism, and the management of Mental Cases. There is a full description of the various kinds of cases in which medical men may be called upon to give evidence most frequently, viz., in the Coroner's Court, and the Practitioner will always be wise in reminding himself that all evidence begun in that Court may end in being retold on a trial for murder at the Assizes, and he will be cautious and careful accordingly. Altogether a book which every practitioner, young and old, will do well to read, mark, and inwardly digest; so that it may seem a little ungracious to remark that the excellent matter of the book is sometimes marred by attempts at "fine writing," of which the following sentence, on p. 165, is an example:—"The logical differentia-

tion of the condition of alcoholic intoxication has become the more difficult as it is increasingly recognised that many forms of mental facility, involving abnormalities in the physiology of responsibility, are directly dependent upon the presence of definite poison in the blood." Numerous medico-legal cases are cited, but unfortunately only in rare instances does the author say where they are reported.

"Catalogue of Lewis's Medical and Scientific Circulating Library, including a Classified Index of Subjects." By H. K. Lewis. New edition. 1908. Price 5s. net.

The last complete edition of Mr. Lewis's catalogue appeared in 1898, and this new edition contains an increase of 167 pages. It is a carefully compiled volume, useful alike to library subscribers and to others requiring a full list of recent English medical books. We confidently recommend it.

"The Operations of General Practice." By Edred M. Corner and H. Irving Pinches. Second edition. Pp. 338, with 179 illustrations. London: Henry Frowde and Hodder & Stoughton. 1908. Price 15s. net.

A work that occupies an intermediate place between the small surgical hand-book and the text-book of operative surgery might be expected to appeal to the junior hospital resident and the general practitioner. That the above volume has found a public would appear from the issue of a second edition within a year. Some new matter of a miscellaneous kind forms an additional chapter at the end of the book, and a last chapter contains lists of instruments required for the various operations and minor procedures described. There is an error in page 285 where a solution of 1 in 100 is stated to be equivalent to 1 grain in 2 ounces, but this and some looseness of arrangement are the only faults we would find in a book which is commendably clear and concise.

"A Treatise on Diseases of the Skin." By Henry Stelwagon, M.D., Ph.D. 5th edition. London: W. B. Saunders & Co., 1908. Price 25s. net.

The latest edition of this work maintains its high reputation as a standard work of reference in dermatology. The bibliography is extensive and the book is in every way complete. It is not so conspicuous as an expression of original thought. There are the usual American spellings and the English reader finds a difficulty with such words as "syphilid." The work is profusely illustrated with excellent photographs—those illustrating syphilis for instance are very helpful and comprehensive—while

the coloured pictures are a distinct advance upon those of earlier editions. We note that in speaking of the treatment of ringworm the writer advises that x-rays be reserved for chronic rebellious cases only. He does not differentiate rodent ulcer so sharply from epithelioma. His description of certain types of epithelioma would in this country be applied to rodent ulcer. The book can be confidently recommended to the advanced student, but it is somewhat ponderous for the beginner. It is well up to date and includes a survey of "opsonic" methods.

"Public Health Laboratory Work." By HENRY R. KENWOOD, M.B., D.P.H., F.C.S. Fourth edition. London: H. K. Lewis. 1908. pp. 468. Price 10s. net.

A perusal of the fourth edition of this excellent work confirms the favourable view formed of the earlier editions, and it will be a valuable addition to the library of the M.O.H. and Public Analyst.

The greater part of the work (pp. 364) treats of the chemical and physical examination of water, sewage, air and various articles of food. Recent work and methods are fully entered into and explained, and we are pleased to see an exhaustive chapter on the detection of preservatives and colouring matter in foods.

In the D.P.H. examinations we frequently find questions on Meteorology and Meteorological instruments and we should like to have seen a small chapter on this.

The highly important subject of food poisoning is dealt with in two parts. 1st in the chemical section, 2nd in the bacteriology section, it would be desirable in our view to have a special chapter devoted to all aspects of this important and difficult question with concise notes of the most notable outbreaks.

The Bacteriology section has been entrusted to W. G. Savage, B.Sc., and we find full accounts of the bacteriological examination of water, air, soil and foods, and of antiseptics, and a description of the most important pathogenic bacteria. All this is admirably done, but we are of opinion that this section which fills only 80 pages has suffered from the over-elaboration of the chemical section. Many students for the D.P.H. commence with little or no knowledge of bacteriology, and it would have been advisable to have given a fuller and more detailed account of apparatus, the principles of sterilisation, the preparation of nutrient media and special stains; and there is hardly an adequate description of many important organisms such as actinomycosis, the bacillus of glanders, tetanus, malignant œdema, etc.

The book is illustrated by numerous wood-cuts showing chemical apparatus, also the various parasites and the different vegetable fibres and starch grains, and by a number of plates illustrating the organisms found in water sediments.

"International Clinics." Vol. IV., Seventeenth Series, 1907. Philadelphia and London: J. B. Lippincott Company.

This volume contains some thirty papers chiefly by American writers. Some are of immediate practical value, while others represent original work and observation of considerable interest and suggestiveness.

Serumtherapy receives two important contributions from France. Chantemesse gives his experience over five years with an antityphoid serum: out of a total of 712 cases there were 27 deaths, or 3·7 per cent, the average for the fourteen large general hospitals of Paris for the same period being 17·3 per cent. Special interest attaches to Weil's work on injections of fresh blood serum in blood-states that give rise to hæmorrhage. In hæmophilia the injections are both preventive and curative, as the serum completely corrects the blood disorder; in hæmorrhagic conditions, acute and chronic, primary and secondary, encouraging results were obtained. The sera of man, rabbit, horse and cattle were equally efficacious, and even anti-diphtheritic serum was used.

A. W. Hewlett contributes a quite intelligible account of the common cardiac arhythmias, and Pancoast an illustrated study of gastroptosis from the radiographic stand-point. Pathology is represented by a case of pseudomyxoma peritonei in a man secondary to cystic disease of the appendix, and by a discussion of the pathogenesis of syncytioma malignum.

The reader will find Calmette's announcement of his Ophthalmo-Reaction supplemented by a later communication based upon a total of 321 cases.

"Diets in Tuberculosis." By Noel Dean Bardswell, M.D., Med. Supt. King Edward VII. Sanatorium, and John Ellis Chapman, M.R.C.S., Med. Supt. Coppin's Green Sanatorium. London: Henry Frowde, Oxford University Press. 1908. Price 6s. net.

After some preliminary remarks on the principles underlying the Sanatorium treatment of pulmonary tuberculosis, the authors proceed to deal with the question for which the book is essentially written, viz., the provision of an efficient and economic diet for the consumptive poor. They point out the futility of telling those with limited means to eat freely of expensive foods, *e.g.*, milk, meat, butter, etc., and having experimented with various diets on patients (details of which experiments are given), they are enabled to shew how the requisite food and energy value can be most economically obtained.

The book is useful not only to those who have to feed consumptives on a large scale in the Sanatorium or elsewhere, but provides clear and simple instructions and recipes, which can with benefit be given to such patients as are compelled to fend for themselves.

"Treatment of Tuberculosis by Paratoxin." By E. Gerard and G. Lemoine. Paris: Vigot Frères. Price 1·5 Franc.

Acting on the fact that the liver defends the system against infections and intoxications, the writers, by various procedures and the use of certain solvents, obtained from bile preparations free from pigment, and to these preparations gave the name of Paratoxin.

In the first place they experimented with this body by subcutaneous injections in guinea-pigs which had previously been inoculated peritoneally with an emulsion of tubercle bacilli. By a comparison with other animals similarly inoculated with tubercle bacilli, but not receiving Paratoxin, they came to the conclusion that the latter body seemed to have the power of arresting the tuberculous processes.

Subsequently the Paratoxin was tried in a number of patients and the writers noted a considerable amelioration in the case of those in the first and second stages of the attack of phthisis. The treatment was carried out without interfering with the occupation or mode of life of the different patients, and seems to have given almost uniformly satisfactory results, though the curative process was most active in those receiving at the same time "open-air treatment."

Though the remedy can be successfully administered by the mouth, it is best given subcutaneously in doses of 1 cc. up to 4 cc. daily. No local or general reaction seems to follow its administration in this manner. In the case of tuberculous laryngitis it is said to be most effective given by intralaryngeal injection.

"Rough Notes on Remedies." By William Murray, M.D., F.R.C.P. London: H. K. Lewis. 1908. 6th edition. Price 4s. net.

In this edition of Dr. Murray's well-known work is a new chapter on the "Therapeutics of Indigestion." The type of indigestion which is dealt with specially is "the hypersensitive, catarrhal, dilated, irritable and feeble stomach." After instructions as to diet, which are not markedly different from those generally recommended, Dr. Murray writes of the drugs which he uses:—First thing in the morning, after a cup of weak, milky tea a teaspoonful of vegetable charcoal is given. This "purifies and soothes" the stomach and causes the expulsion of any gases there. Then after breakfast a sedative is ordered, the chief constituent of which is oxalate of cerium, "that most valuable of sedatives." Ten grains of pepsin and eight grains of cerium, is the prescription. Oxalate of cerium is recommended as neither retarding nor impairing digestion, nor as constipating like bismuth does. Dr. Murray gives many other details of treatment which should be read and profited by.

"Diseases of the Nose and Throat." By D. Braden Kyle, M.D. 4th edition. London and Philadelphia: W. B. Saunders & Co. Price 18s. net.

This book, which is now in its fourth edition, is intended for the use of students and general practitioners, and is planned so as to give special prominence to pathological changes. We doubt whether a too rigid adherence to this idea has not rendered the book too lengthy and discursive to be recommended to the busy man who requires a working knowledge of the subject. The pathological sections are in the main good and often show evidence of original thought and investigation. The author has paid much attention to the changes, microscopical and otherwise, which occur in mucous membranes as the result of disease, and throughout the book there are many excellent descriptions and illustrations of such changes, although some of the reproductions are not very clear.

A peculiar fondness for the use of warm milk as a nasal douche, a practice which we have not seen recommended in English text-books, is shown, otherwise the treatment advised is orthodox and modern with the curious exception that no mention is made of the recent "opsonin" method of dealing with certain infective diseases. A full and clear account of the technique of direct bronchoscopy is given by Chevalier Jackson, who has had unusual experience in this line of work; it is evident that considerable dexterity and much practice is necessary before this method can be usefully employed by any operator. Even to the specialist the opportunities for using this method are so limited that very few can become proficient in bronchoscopy, and so for years we are likely to retain the older methods of dealing with foreign bodies in the upper air passages.

While we cannot recommend the book as a standard text-book to be used right through by the practitioner we may say that as a reference book it is excellent.

"An Introduction to Dermatology." By Norman Walker, M.D. 4th edition. Green. Price 9s. 6d. net.

The fourth edition of this work shews a marked improvement in the illustrations, both in number and quality. The coloured plates indeed equal those in Jacobi's Atlas, which is the highest possible praise. The text retains its vigorous expression of the author's well-known views, and his personality is stamped throughout the book. We regard this as the best work on skin diseases for the student. The literary style is excellent, the writing being simple and straightforward, while there is an absence of anything that may confuse the reader. Dr. Walker

repeats his famous definition of eczema as "the term commonly applied to any wet or scaly inflammation of the skin, of the cause or nature of which the observer is ignorant," and he still regards psoriasis as a manifestation of seborrhœa. But originality is his hall-mark.

"Hay-Fever, Hay-Asthma, its Causes, Diagnosis and Treatment." By WILLIAM LLOYD, F.R.C.S., Surgeon-in-Charge of the Nose, Ear and Throat Department, Kensington General Hospital. Second edition. London: Henry J. Glaisher. 4s. 6d. net.

WE have nothing but praise for this little volume, which contains a clear, comprehensive, and lucid account of the disease known as Hay-Fever. That portion of the book which deals with the question of treatment is specially good, and we can warmly recommend its perusal to all who wish to effectively combat this prostrating disease. We are in entire accord with the author in his words of caution as to the use of cocaine as a specific remedy, and we can also endorse his disappointing experiences in the use of Dunbar's serum. An excellent feature of the book is a special chapter devoted to the technique for the application of the electro-cautery, while the illustrative cases in the last chapter contain much that is instructive.

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365.

THE MEDICAL CHRONICLE.

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LECTURES ON THE PATHOLOGY OF CANCER.

By Charles Powell White, M.A., M.D., F.R.C.S.,
Pilkington Cancer Research Fellow, University of Manchester.

(Continued from p. 320.)

PART III. CAUSATION.

Causal Factors.

Having considered the rudiment of origin and the mode of growth by which the cancer or other tumour grows from the rudiment, we have next to consider why tumour growth occurs or, in other words, what is the cause of Cancer?

The causal factors which give rise to any disease can be divided into the *essential* causal factors, or those factors without which the disease in question could not arise, and the *adjuvant* causal factors, or those factors which assist in the causation of the disease without being, themselves, individually necessary. Causal factors may also be divided into the *extrinsic* and *intrinsic* factors.

We have, then, two classes of diseases:—(1) Those in which the essential causal factors are extrinsic; (2) those in which the essential causal factors are intrinsic. A disease may be specific in two ways:—(*a*) It may be characterised by a specific extrinsic causal agent; (*b*) it may be characterised by specific lesions. If we consider a disease as characterised by a specific extrinsic causal agent we find that it does not show constant lesions. If, on the other hand, the disease is characterised by specific lesions it is not characterised by a specific extrinsic causal

agent.[14] In other words, any extrinsic causal agent will, under differing circumstances, give rise to different lesions, and any given lesion may be due to many different extrinsic causal agents. For instance, pneumococcus infection may be characterised by fibrinous, serous, or purulent inflammations of various parts of the body, and, on the other hand, fibrinous pneumonia may be due to other organisms than the pneumococcus.

Extrinsic Causal Factors.

It has long been known that extrinsic factors play a part in the causation of Cancer. Cancers may arise in chronic ulcers, in patches of lupus, or in scars derived from these. They may also arise in connection with injury as in the case of Sarcoma arising in connection with a fractured bone, or in connection with chronic irritation from a clay pipe, a jagged tooth, gall stones, irritating food, soot, etc.

The chief theory which associates Cancer with extrinsic factors is that which attributes it to the action of specific parasites.*

While at first sight, Cancer has a close resemblance to such a parasitic disease as Tuberculosis, yet, on closer examination, we find that this resemblance is no ground for concluding that Cancer is due to a parasite. Tubercle bacilli introduced into the tissues give rise to an inflammatory reaction with the production of fibrous tissue. Similarly cancer cells give rise to an inflammatory reaction with the production of fibrous tissue. Hence the cancer cell is analogous to the tubercle bacillus and we cannot therefore argue that the proliferation of cancer cells is due to a parasite. If we attempt to compare the tubercle baccilus with the supposed cancer parasite the analogy, and the argument derived from it, fail completely. In fact Cancer may be considered as an infective disease only in the sense that the cancer cell is itself the infecting agent.

A serious objection to the parasitic theory is found in the impossibility of explaining on this ground the congenital cancers and the non-malignant tumours and yet there is no reason to suppose that the causation of Cancer is essentially different from the causation of other tumours.

* For a criticism of this theory see appendix.

Parasites may give rise to tumours but they only do so indirectly in a similar way to other irritants and not in any specific manner. Examples are seen in the tumours arising in connection with Lupus and Bilharziosis.

The extrinsic causal factors are thus adjuvant and not essential factors.

Intrinsic Causal Factors.

We have now to consider the intrinsic factors in the causation of Cancer and other tumours. This is a more difficult subject than the extrinsic factors since we know very little about the intrinsic factors underlying normal conditions of growth, etc. To understand this question we must go back to the first principles of biology.

Cell Proliferation.

There have been many discussions as to whether the phenomena of life are to be explained by the known forms of energy or whether a special *vital principle* is necessary for their explanation, and physiologists have always been divided on this point. Personally, I believe that there is a vital energy which is as distinct a form of energy as electricity. This vital energy manifests itself especially in assimilation and proliferation. While it can only be derived from pre-existing vital energy, it is maintained and increased by the transformation of other forms of energy, and, in its turn, it can manifest itself as mechanical energy, heat, light, electricity, or chemical action.

The chief characteristic of living organisms is proliferation, and this power of proliferation is inherent in all living beings. All living organisms continue to multiply except so far as they are prevented by antagonistic forces.

In Nature the restraints are of varying character. The higher organisms are restricted to a large extent by the necessity for sexual congress. All organisms are subject to the restraint arising from the struggle for existence, especially in the difficulty of obtaining the necessary nutriment and in resisting the attacks

of their enemies, and, in the course of evolution, it has come about that those organisms which are most liable to destruction have developed the greatest proliferative capacity, as in the case of bacteria, animal parasites, fish, etc.

Now what is true of living organisms in general is equally true of the constituent parts of the organism, that is, of the cells which make up the structure of the organism.

We find that all the cells of the organism are capable of proliferation in a varying degree. All proliferate during the development and growth of the organism. After a certain time, which differs in different organs, we find that some cells, such as neurocytes, have practically lost the power of proliferation; others, such as myocytes and desmocytes, retain the power of proliferation under certain conditions, while some epicytes and the mother cells of leucocytes and erythrocytes continue to proliferate throughout life to make good the loss due to various causes. Ova and spermatozoa lose the power of proliferation on attaining maturity, to regain it only by subsequent fertilisation.

Now the sites of origin of tumours correspond accurately to these facts. We find that neurocytes which have lost the power of normal proliferation only give rise to tumours with the greatest rarity; striated myocytes also extremely rarely give rise to tumours, while tumours arise from smooth myocytes much more frequently, and especially in parts in which, like the uterus, they show a physiological multiplication at intervals throughout life. The cells which most frequently give rise to tumours are the epicytes, and here again the most frequent sites are those where proliferation occurs regularly, or at intervals, throughout life such as the skin, alimentary canal, breast, and female organs of generation, while those epicytes which are normally more quiescent, as in the liver, kidneys, sweat glands, etc., only rarely give rise to tumour formation.

Proliferation, then, is an inherent property of the cell, as it is of the living organism, and those cells which have the greatest proliferative capacity are the most frequent sources of tumour growth. These facts tell strongly against the theory of embryonic rudiments as an explanation of tumour growth.

Influences which Limit Proliferation.

We have next to consider why tumour growth does not occur as a general rule, or, in other words, what are the influences which limit proliferation under normal conditions? This is another way of stating the question, What are the influences which determine the form and size of any living being?

When the ovum undergoes segmentation the cells at first formed resemble one another. Soon, however, differentiation takes place and the cells assume characters which distinguish them from each other.

The different characters which the cells then assume appear to depend to a large extent on their position in the embryo, or, in other words, on their position in relation to the other cells of the embryo. Since the fertilised ovum contains all the potentialities of the organism, differentiation would appear to consist in the progressive loss of latency of certain characters and a consequent predominance of the characters which remain. Differentiation is found to a certain extent in some of the colony-forming protozoa in which some of the individuals have motile functions, others nutritive, others generative.

The cells, in spite of differentiation, retain their power of proliferation which is inherent in them, but different kinds of cells retain this power in very varying degrees.

Co-ordinating Mechanism of the Organism.

Seeing, then, that this differentiation and proliferation occur in the different tissues, we have to ask ourselves, What is the co-ordinating mechanism of the organism? What are the influences which so regulate differentiation and proliferation that a perfect condition of equilibrium is maintained? Even in those cells which proliferate continuously there is a condition of equilibrium, because the proliferation is just sufficient to balance the corresponding destruction. In the skin and mucous membrane the epicytes proliferate only to such an extent as to replace the continual waste of cells which are cast off at the surface, and in the case of leucocytes and erythrocytes the production of new cells is balanced by the destruction which

takes place in the spleen and elsewhere. In those tissues, the cells of which do not show continuous proliferation, we find that the destruction of some cells is followed by regenerative proliferation of the cells which remain, which ceases when the defect is made good.

This question of the co-ordinating mechanism of the organism is the fundamental question for the pathology of tumours. If we knew what are the influences at work in producing the co-ordination, then we should be very near solving the problem of the causation of tumours, since tumours arise from a defect in co-ordination. Unfortunately we do not know what these influences are.

The form of any organism, which depends on differentiation and proliferation, is an inherent property of the species and is transmitted by heredity. Hence the co-ordinating influences are a property of the germ plasm and are transmitted equally by the ovum and spermatozoon. The influences within the organism are apparently intercellular, each cell exerting certain influences upon its neighbours. That such intercellular influences exist is shown by the co-ordination of the movements of the cilia in ciliated epithelium. This ciliary movement remains regular and co-ordinated in a detached piece of ciliated epithelium for a long time. As to the paths by which these influences pass from cell to cell, it would appear to be by direct continuity between the cytoplasm of adjoining cells, each cell being in protoplasmic continuity with its neighbours. This has not been entirely proved, but we can see the connections between the prickle cells of the epidermis, and they have been demonstrated in other kinds of epithelium, in smooth muscle, in bone, in fibrous tissue, and, according to some, they are present in cartilage.

In fact we have come to take too strict a view of cellular pathology. We are accustomed to explain all pathological changes by cellular activities without considering the organism of which the cells are the constituent parts. A living organism, however, is not a mere aggregation of cells, it is a distinct entity in itself—an individual—and the cellular activities are everywhere subodinated to the control of the whole organism.

The multicellular organism can be regarded as being composed of cells, differing in structure according to the function they have to perform, which everywhere retain intercellular protoplasmic connections, and it is through these connections that the co-ordinating mechanism of the organism acts. Development and growth are to be considered as primary properties of the organism as a whole, the proliferation of the cells being subsidiary. That is to say, the organism does not grow because the cells proliferate, but the cells proliferate because the organism grows.

Under normal conditions cells and tissues separated from their organic connections can form secondary connections with the neighbouring parts. Thus, when leucocytes penetrate between prickle cells, the intercellular bridges which they break in their progress are reunited behind them. Also in skin grafting and the reunion of wounds connections are formed with the neighbouring parts, and by means of these secondary connections the organism is again able to exert its co-ordinating influence and so to limit the cellular proliferation to the amount necessary to repair the deficiency.

The intercellular influences, besides regulating proliferation, also play a part in controlling functional activity.

While this co-ordinating influence is thus a property of the organism as a whole, it does not appear to be centred in any particular situation. It is also shown during the survival of detached portions, especially in the lower organisms. Hence a portion of one of the lower organisms can reproduce the whole, a heart removed from the body will continue to beat rhythmically, a fragment of ciliated epithelium still shows co-ordination of the ciliary movement.

The Relation of the Tumour to the Organism.

If a portion of tissue, or group of tissues, be separated from its organic connection with the neighbouring parts, while retaining its position in the organism, and be unable to form secondary connections, it will no longer be subject to the control of the organism. Therefore, if it begin to grow, it will grow as an independent individual, dependent on the organism only as far

as its blood supply is concerned, thus forming a tissue tumour. Growing as an individual it will displace the surrounding tissues as it increases in size but, having no reproductive mechanism, it will not give rise to secondary tumours. If, however, a piece of the tumour be detached, as in the rupture of a papilliferous ovarian cyst or in a piece left behind in incomplete removal, such a detached portion will itself grow into a tumour resembling the old one provided that the vascular connections remain sufficient. While the tissues of which a simple tumour is composed are removed from the influences of the organism, they retain their connections *inter se* so that the whole tumour grows as an individual.

A simple tumour can thus be regarded as an asexually produced descendant which lives parasitically in the parent organism.

In a cancer the case is different. Here it is a cell which is freed from the co-ordinating influences of the organism. The cell thus proliferates, giving rise to new cells which are also independent. These cells penetrate into the spaces of the surrounding tissues, and wherever they settle they give rise to new groups of cells. A cancer, then, cannot be regarded as an individual; it is a colony of cells and the cells themselves are individuals.

The objection may, perhaps, be raised in this connection that the blood corpuscles of the normal body are independent cells and yet do not show the proliferative capacity which we find in cancer cells. The blood cells, however, are in no sense tissue cells. They are cells which, when they have become free, are destined for a limited existence only and do not proliferate under normal circumstances, except to a slight degree by amitosis.

A simple tumour, then, is to be regarded as an asexual multicellular organism while a cancer is comparable to a colony of unicellular organisms, and, just as unicellular organisms can form among themselves secondary associations with definite characters, as is seen in bacteria and the colony-forming protozoa and diatoms, so the cancer cells can form secondary associations *inter se* with the formation of distinct tissues. We find that

those cancers in which these secondary associations are formed most readily are the least malignant and *vice versa*, those cancers in which the cells remain independent of each other are the most malignant. For instance, among carcinomata the cells of the columnar-celled type most readily form tissues (epithelial tubes) and this is the least malignant species. On the other hand the cells of a spheroidal-celled carcinoma show very little tendency to form associations *inter se* and we find that the spheroidal-celled carcinoma is the most malignant form.

Another character in which cancer cells resemble protozoa is the limitless capacity for proliferation which they exhibit. Jensen's mouse cancer has now been growing for over seven years, that is, for a far longer period than the duration of life in a mouse, and it shows no sign of diminishing in vigour. It has been transplanted into innumerable generations of animals, and descendants of the original tumour are now to be found in laboratories throughout the world. At each successive transplantation the epithelial cells of the implanted tumour continue to proliferate and so give rise to the new tumour, so that the cancer cells show the same limitless proliferative capacity that is found in unicellular organisms.

Whether or not cancer cells show a still closer resemblance to unicellular organisms by occasionally manifesting a sexual process in the course of reproduction is not certainly known, but various observations on the characters of the mitoses in cancers tend to show that such is the case although some of the changes seem open to doubt. Appearances are sometimes found which suggest that cancer cells sometimes conjugate.[2]

Cancer cells show a further resemblance to unicellular organisms in that they will withstand the effects of cold. The cells of a mouse cancer can be kept at a temperature of 0° C. for several days or weeks,[2] and will even withstand the temperature of liquid air for some time and still retain the power of giving rise to a tumour when introduced into a new mouse,[8 1] whereas if kept outside the living body at body temperature they quickly die.

A malignant tumour, then, is not a distinct entity in itself,

it is a colony of cells, and Cancer can truly be regarded as a process of infection by cancer cells.

The growth of a cancer thus differs from the growth of the organism. In the organisms the proliferation of the cells is secondary to the growth of the whole cell-complex, while in a cancer the growth of the whole is the result of the proliferation of the cell units.

If Cancer be regarded in this light all the phenomena of malignant disease are easily understood.

The Nature of the Intercellular Influences.

I do not intend to discuss here the phenomena of mitosis but I may remind you that cell division is initiated and effected by the centrosome with its associated amphiaster. These structures are formed of a substance known as *archoplasm*. It is not certainly known whether the archoplasm is a permanent constituent of the cell or whether it is modified cytoplasm, but there are reasons for believing that it is permanent and that the centrosome and archoplasm are handed down from cell to cell in the same way as the nucleus and cytoplasm. The centrosome appears to control not only the movements which result in cell division, but also amœboid and ciliary movements. Thus, while the nucleus and cytoplasm are concerned with nutritive and metabolic changes, the centrosome and archoplasm are concerned in the movements and division of the cell. It may be, then, that the intercellular connections are composed of archoplasm.

As to the nature of the influences which pass from cell to cell we know nothing. We can only say that they are an inherent property of the species and are handed down from generation to generation by heredity. They are present and active from the first commencement of division of the fertilised ovum, and hence cannot depend altogether on the presence of substances which are elaborated in organs which are developed at a later period, unless a store of such substance is laid up in the ovum sufficient to control development and growth in the early stages.

While it may be that some chemical substance, by reason of its chemical or physical properties, may play a part in controlling

cell proliferation, it is difficult to imagine how such a substance could control the form and arrangement assumed by the mass of cells resulting from the proliferation. It is inconceivable that the form of any species of organism can be dependent on the presence of any chemical substance. The controlling influences would seem to be of a more subtle nature. It is in connection with questions like this that we seem bound to admit the existence of a special form of energy which is peculiar to living organisms.

Chemical substances may, however, play some part in the control of growth, just as they take part in co-ordinating function in certain parts of the body. Indeed it is known that the secretions of the ductless glands have some influence on growth.

I have lately been investigating the nature and significance of certain crystals which occur in tumours. If a section of a cancer, which has not been subjected to alcohol, be examined by polarised light crystals are found in nearly every case. Some of these crystals are fats or fatty acids and others are cholesterin. In addition there are minute needle-shaped or prismatic crystals occurring singly or in clusters, either in or among the cells. These crystals are distinguished by their peculiar behaviour on melting and subsequent cooling. Under these conditions they do not again solidify but assume a crystalline fluid condition appearing as doubly refracting globules (Fig. 28). These crystals are found especially in and among the healthy proliferating cells of the tumour while the crystals of fat and cholesterin are found especially in the degenerated areas. Degenerated areas are, however, often free from crystals of any sort while the proliferating areas may contain numbers of them.[12]

Having found these crystals in a number of cancers and in some other conditions, I made an extended investigation into their nature.[11] It can be shown that they contain cholesterin and, in some cases, fatty acids. I therefore experimented with pure cholesterin and other chemical substances in order to find out under what conditions the peculiar doubly refracting globules could be obtained. I found that if choles-

terin was melted with one of the higher fatty acids or certain alcohols and other substances, the globules appeared during the cooling of the preparation, and that the mixture subsequently solidified in the form of crystals closely resembling the crystals found in the sections.

It is fairly certain that these crystals in the tissues consist of cholesterin in loose combination with other substances. What the associated substance is cannot always be detected. Often it is a fatty acid as shown by the staining reaction of the globules resulting from melting the crystals; at other times they do not show the fatty acid reaction. It is probable that lecithin is one, perhaps the commonest of these associated substances, but we have no reliable means of detecting lecithin with the microscope. When these cholesterin mixtures are in the crystalline fluid condition they display certain peculiar physical properties. They can form an emulsion with water and it appears that cholesterin exists normally in the body as a colloidal solution or fine emulsion in association with lecithin or fatty acids, the cholesterin and the associated substance helping to keep each other mutually in solution in the body fluids. It is certain that cholesterin plays an important part in cell life, and the presence of these crystals in cancers, apart from any evident degeneration, suggests that cholesterin may be associated in some way or other with the regulation of cell proliferation.

As bearing on this point I may mention that spermatozoa are very rich in cholesterin, a fact which points to its being of importance to the developing embryo.

Another interesting point in this connection is the fact that gall stones are 2½ times as common in patients with carcinoma as in patients of similar ages suffering from other diseases.

The origin of Cholesterin is not certainly known but, from my observations, it would seem probable that it is secreted by the cortex of the adrenal body. I have examined a large number of adrenals and I find in every case crystals, resembling the crystals found in cancers, consisting of Cholesterin in association with other substances (Figs. 29, 30, 31). Usually these crystals occur in great masses filling the whole cortex and giving rise to the condition often called fatty degeneration of the

adrenal. It is, however in no sense a degeneration. It appears to be a normal condition and it seems as though the function of the adrenal cortex is to secrete Cholesterin and to pass it into the blood.[13]

Now we find that maldevelopment of the adrenals is usually associated with maldevelopment of other parts, especially of the brain, or with infantilism. On the other hand, hypertrophy and tumours of the adrenal cortex in children are associated with sexual precocity or with gigantism. Hence it would appear that the secretion of the adrenal cortex has some share in the mechanism of the control of growth and development. These observations, then, suggest that Cholesterin is elaborated in the adrenal cortex and that it plays some part in the regulation of cell proliferation.

I may mention that, some years ago, Mr. Holden Webb of Melbourne, suggested that Cancer was due to the crystallisation of Cholesterin from the living cells and he proposed a method of treating Cancer by hypodermic injections of soap solution, the idea being that the soap would help to keep the cholesterin in solution. Mr. Webb's suggestion appears to have been pure hypothesis as he did not detail any evidence on which it was founded.[9]

Physiological Equilibrium.

We have next to determine why an extrinsic causal factor, which normally gives rise to inflammatory or compensatory changes, occasionally gives rise to tumour formation.

An epithelial cell is acted upon by the influences of the contiguous epithelial cells and also by the influence of the subjacent connective tissue. Normally these influences are in equilibrium with the intercellular proliferative forces. At the free surface, there being no antagonistic influences, the activity of the cell is manifested by proliferation, as in the skin and mucous membranes, or by secretion as in glands, or by absorption. Similarly a connective tissue cell is subject to the influences of the neighbouring cells which are in equilibrium with the proliferative forces within the cell.

Now the changes that occur when the equilibrium is disturbed will differ according as the original condition of equilibrium was *stable* or *unstable*. If the condition was stable any disturbance, by removing the influences, will be followed by proliferation of the cell which will continue until the influences of the neighbouring cells are again restored when the proliferation will cease. On the other hand, if the original condition of equilibrium was unstable, the intercellular influences will not be restored and proliferation will continue. Take, for example, an epithelial cell, the proliferative forces of which are in equilibrium with the restraining influences of the neighbouring cells. If we disturb the equilibrium by removing some of the neighbouring epithelial cells, the proliferative capacity is set free in the direction of the removed influence. The cell therefore commences to proliferate and, if the original condition of equilibrium was stable, proliferation will continue until, by the replacement of the cells which had been removed, the intercellular influences are again restored when proliferation will cease. This sequence of events we see in the regeneration of epithelium which follows an abrasion or a wound. If, however, the original condition of equilibrium was unstable, the intercellular influences will not be restored. Hence proliferation will continue indefinitely thus giving rise to a papilloma or an adenoma. If, instead of removing the influence of the neighbouring epithelial cells, we disturb the equilibrium by removing the influence of the subjacent connective tissue, then, if the original condition of equilibrium was stable, the cell proliferates for a time and then ceases as the restraining influences are restored. This is seen in the traumatic epithelial pearl produced by the displacement of epithelial cells into the subjacent connective tissue. If, on the other hand, the original condition of equilibrium was unstable, the restraining influences will not be restored and proliferation will continue in the connective tissue thus giving rise to a carcinoma.

Similarly in regard to the connective tissue cell, disturbance of the equilibrium, if stable, leads to regeneration and repair, but if unstable the result is a histioma if the relation between the cells and intercellular substance continue normal, or a

sarcoma if the cells proliferate without producing the intercellular substance.

Similar conditions occur with regard to functional activity. The functional equilibrium, just as the structural, may be stable or unstable and the result of disturbance is accordingly compensatory or progressive Hyperergasis.

We can say, then, that a tumour arises from a disturbance of a position of unstable equilibrium between the proliferative forces within the cell and the antagonistic influences of the neighbouring cells. The characteristic feature of an unstable condition of equilibrium is that it needs only a very slight force to upset it, hence the same extrinsic factor which, under normal conditions, only produces a temporary disturbance, will, if the equilibrium be unstable, give rise to tumour formation. An injury to a bone usually gives rise to a fracture with subsequent healing or to a periosteitis with subsequent recovery, but a similar injury may, in some cases, be the starting point of a sarcoma of other tumour.

The instability of equilibrium is probably a local condition as a rule but it is possible that it may occur as a general diathetic condition.

While the instability of equilibrium will explain the origination of a tumour it will not explain its extension to distant parts and its continued growth in metastatic nodules and in transplanted tumours. We have seen that cancer cells must be regarded as unicellular organisms which, while they may form new associations among themselves, have lost the power of forming secondary connections with normal tissues through which restraining influences could pass. Moreover it is possible that the cells, by their escape from the control of the organism, have acquired an increased capacity for proliferation—a habit of growth—which continues in the sites of metastatic nodules. The cancer cells therefore continue to proliferate as long as they are supplied with the necessary nutriment and the reaction of the surrounding tissues is of the same kind as the reaction caused by parasites or foreign bodies. The growth in metastatic nodules is usually more circumscribed and less infiltrative than

at the primary site where the condition of unstable equilibrium exists.

The immediate essential causal factor of tumour formation is thus an *unstable condition of equilibrium* between the component parts of the body, and the next question we have to consider is: What are the causes of this instability?

The Influence of Inflammatory Conditions.

It has long been known that chronic inflammatory conditions may lead to Cancer. A chronic ulcer of the leg may continue for years without appreciable alteration, but the continued irritation may at length so alter the condition of the tissues that the equilibrium becomes unstable, when the result is tumour formation. Similarly Carcinoma may start in a chronic gastric ulcer, or in connection with the chronic inflammatory changes produced by Lupus or Bilharziosis, and Sarcoma may arise from the callus of a healing fracture. Also Leucoplakia of the tongue is said to be a frequent precursor of Carcinoma. The irritants in these cases do not act directly on the epithelial cells, but they so alter the connective tissue that the equilibrium between it and the epithelium becomes unstable so that tumour formation follows. In Bilharzial Carcinoma, as Dr. Harris pointed out, the ova, which are the irritating factors, are not situated in the growth itself but in the neighbouring connective tissue.[5] (Figs. 32, 33.)

Other examples of chronic irritation producing cancers are seen in the influence of clay pipes, jagged teeth, etc., on the occurrence of cancer of the mouth.

During the proliferative changes which accompany these inflammatory conditions it is very likely that certain tissue cells will become separated from their normal connections. Such isolated cells may form the rudiments from which a tumour may arise, either during the progress of the inflammation, or, after it has healed, from the scar.

The Influence of Heredity.

It is impossible to obtain reliable statistics as to the part played by heredity in cancer because it is only in rare instances

that we can obtain a reliable family history. There is no doubt, however, that cancer does occasionally run in families and this is what we should expect.

In many cases, however, the tendency to cancer in an individual is not so much due to heredity as to a want of heredity—it may arise in the individual as a spontaneous variation or mutation. It is these spontaneously arising cases that we should expect to be handed on to the descendants by heredity since it it an accepted fact that variations tend to be inherited. On the other hand, cases of acquired cancer, such as those arising in connection with chronic irritation, we should not expect to be transmitted to descendants as it seems clear that acquired characters are not inherited.

The Influence of Civilisation.

There can be little doubt that the various influences grouped together under the title of civilisation play a part in producing a tendency to Cancer. It is difficult to obtain statistics with regard to Cancer in uncivilised races and wild animals but it seems certain that, while Cancer is not unknown under these conditions, it is much more rare than among civilised races and domesticated animals. It is probable that no one factor in civilisation is responsible but that it is the condition as a whole that is at fault. Unnatural and excessive food, unhealthy surroundings, indoor and sedentary occupations, and the mental anxiety and worry which are inseparable from civilised life probably all take a share in producing a wear and tear of life that is conducive to the formation of an unstable condition of equilibrium.

The Influence of Sex, Age, and Site.

When we come to study questions regarding the incidence of Cancer, we are met with the difficulty of obtaining reliable statistics from which we can deduce conclusions. To be of any value the statistics must deal with a sufficient number of cases to eliminate accidental fallacies and each case must be verified microscopically by a competent histologist. Even if this pre-

caution be taken a further difficulty arises in the fact that pathologists do not always agree as to the position of certain tumours. Endothelial tumours will by some be placed among the sarcomata and by others among the carcinomata, while others will allot them a class by themselves. Also some will include gliomata and myxomata with the sarcomata. The majority of the tumours which I have called Blastocytomata are included by others among the sarcomata although the fact that epithelium develops in them distinguishes them from the true sarcomata. Many place the mixed tumours of the parotid among the endotheliomata, without any good reason as far as I can see.

The returns of the Registrar General are not available for deducing conclusions regarding the incidence of Cancer owing to the want of accurate distinction between the different forms, and we are therefore practically confined to the use of hospital statistics which deal with cases selected as suitable for hospital treatment and are, therefore, of no value in determining the incidence of Cancer in the general population.

Bearing these difficulties in mind I propose to give a few results which can be obtained regarding the incidence of Cancer in respect to age, site, and sex, making use of the statistics compiled by the Imperial Cancer Research Fund from the General Hospitals of London (2 No. 2). Besides the error attached to hospital statistics mentioned above it must be remembered that these statistics are obtained from general hospitals and do not include cases from special hospitals such as hospitals for women and children. Hence the proportion of males to females does not represent the actual sex incidence and the statistics show an abnormally large number of cases of Carcinoma of the breast (1026) as compared with Carcinoma of the uterus (298). The statistics are, however, extremely valuable in that every case was verified microscopically by competent pathologists and hence valuable results can be obtained from a comparison of the figures *inter se*.

The statistics for Carcinoma deal with 1928 males and 2197 females and those for Sarcoma with 516 males and 391 females.

In comparing the carcinoma incidence in males and females we must remember that in females there are three situations

which have no counterpart in males. The breast, uterus, and ovaries are, throughout a considerable period of life subject to periodical variations in the activity of cell proliferation and in the state of their blood supply. It is on this fact that the great liability of these organs to Carcinoma and other tumours depends. The breast, uterus, and ovaries together account for 1399 of the 2197 female cases of Carcinoma.

In the following charts which are compiled from these statistics the abscissæ represent the ages in quinquennial periods while the ordinates represent the number of cases per cent of the particular group of cases under consideration. For instance, the ordinates of the curve representing the incidence of Carcinoma in the male are calculated in percentages of the total male cases of Carcinoma and similarly for the other curves.

If we make a chart showing the age distribution of Carcinoma we obtain curves like those in Chart 1. One of these curves shows the distribution of the male cases, another of the female, and the third of the female cases omitting the breast, uterus, and ovaries.

All the curves are remarkably uniform and evidently follow a definite law. This will be found to be the case with all carcinoma curves which deal with a sufficient number of cases to eliminate fallacies.

We notice that all the curves commence to rise at about the age of 25, and, rising slowly at first and then rapidly, reach the maximum at 50 in females and 55 in males, subsequently falling rapidly. The effect of omitting the breast, uterus, and ovaries is to bring the female curve nearer to the position occupied by the male curve so that the maximum incidence occurs at the same age (55). The female curve is, however, still slightly in advance of the male curve.

We can conclude from these curves that age has an important influence on the incidence of Carcinoma.

If we plot out a similar curve for Sarcoma we find a marked difference (Chart 2). The curve starts at a moderately high point due largely to the inclusion of many blastocytomata. It descends rapidly to a minimum in the second and third age periods and then rises during the adolescent period. It sub-

sequently remains at a high level with irregular fluctuations until it finally descends in old age.

It appears from these curves that age has not such a marked influence on the incidence of Sarcoma as it has in the case of Carcinoma. Omitting the initial high level due to congenital tumours, we see that the sarcoma curve rises rapidly during the adolescent period, while the carcinoma curve does not begin to rise markedly until after adult age has been reached.

If we study the age distribution of Sarcoma in different organs or groups of organs we notice several differences in the incidence. The curves, however, are not very reliable owing to the small number of cases in many situations. We find that if we group together the glands—kidney, liver, pancreas, adrenal, and parotid—32 per cent. of the cases occur in the first age period owing chiefly to the inclusion of the blastocytomata.

If, on the other hand, we take the breast, uterus, and ovaries we obtain a curve very similar to the carcinoma curve of the same organs but less regular.

Again, if we take the sarcomata of bone, we find that the curve rises rapidly during the adolescent period to a maximum at the age of 20—25, and then falls immediately to a level which is maintained almost constant until it falls at the age of 65. (Chart 3.)

Thus the age distribution in Sarcoma seems to follow no regular law. The one constant feature seems to be that the second and third age periods show the minimum incidence and that the incidence rises with adolescence.

On the other hand, the curves of the age distribution of Carcinoma in different situations all show a remarkable resemblance to one another, rising rapidly, after adult age has been reached, to a maximum and then falling equally rapidly, the actual position of the maximum varying slightly in different cases.

If we compare the distribution of Carcinoma in the alimentary canal in males and females, we find that, as we should expect, the distribution is very similar in the two sexes, both curves showing identical variations. (Chart 4.) About the same proportion of cases in both sexes occurs in the stomach,

but we notice that the male curve is higher in the parts above the stomach, while the female curve is the higher in the lower parts. While over 50 per cent. of the cases occur above the stomach, over 50 per cent. of the female cases occur below.

This difference is presumably due to differences in the habits of the two sexes.

PART IV. THE BEARINGS OF PATHOLOGY ON TREATMENT.

Recapitulation.

I propose now to consider the principles on which the treatment of Cancer should be based. First it will be necessary to recapitulate the facts which we know about the disease.

(1) Proliferation is an inherent property of the cell. Normally this power of proliferation is kept in check by the influences of the organism as a whole exerted through adjacent cells.

(2) The essential causal factor in tumour formation is an intrinsic one, namely the continued removal or diminution of the influences which restrain proliferation.

(3) This intrinsic factor may be of intrinsic origin alone or may arise from the action of extrinsic causal agents, as, for example, in chronic irritation.

(4) The intrinsic causal factors are not of a specific kind but are the agents we know generally as irritants.

(5) The extrinsic causal factors act partly by so influencing the tissues as to give rise to the intrinsic conditions which I have called *instability of equilibrium*. They also act as determining factors in determining the appearance of a tumour when the necessary intrinsic conditions are present.

(6) In either case the tumour itself at its first appearance is a purely local condition.

(7) Certain chronic inflammatory conditions are sometimes followed by cancer. Unfortunately we cannot say in any given case whether a given inflammatory condition will be followed by Cancer or not. We cannot diagnose with certainty a precancerous condition.

(8) Age has a marked influence in determining the incidence of Carcinoma but its influence in the case of Sarcoma is less marked.

(9) Tumours arise from normal tissues, from aberrant rudiments, or from pre-existing tumours.

(10) Tumours grow by proliferation of their own cells but the area of origin may show some extension. To this extent only do the surrounding tissues contribute to the growth of the tumour.

(11) Cancers extend mainly by infiltration of the surrounding parts, the proliferating cells penetrating the tissue spaces.

(12) The next stage of the process of extension is the permeation of lymphatics, veins, and other natural channels. In this process the cells grow continuously along the channels and the direction of the extension is not determined by the direction of the lymph or blood stream. During permeation of lymphatics in external cancers the extension is greater in the deep fascia than in the superjacent skin or subjacent muscle.

(13) By this process of permeation arise cutaneous nodules, invasion of bones, infection of the regional lymph glands, and, perhaps, invasion of the serous cavities.

(14) In the last stage of extension the cancer cells are detached and carried along by the lymph or blood stream or along mucous canals and give rise to metastatic deposits, *i.e.*, to deposits at a distance from the primary growth.

(15) Cancers, in some animals, can be transplanted to animals of the same species and cells displaced from a tumour can continue to proliferate.

(16) Tumours sometimes disappear spontaneously.

(17) In experimental cancer it is found that when a tumour has disappeared the animal subsequently shows some immunity. This immunity is specific, being most marked for the identical tumour from which the animal has recovered, less marked for other tumours of the same genus, and absent for tumours of another genus.

(18) Since the cells of which the tumours are composed are identical with normal cells it is probable that the metabolism in them is identical with the metabolism of the cells of origin,

making allowance for the rapidity of proliferation in tumour cells.

(19) Cancers and other tumours are liable to the occurrence of the same pathological processes as normal tissues. They can show inflammation, degenerations, necrosis, etc.

(20) Tumours in their growth give rise to an inflammatory reaction of the surrounding parts, resembling the reaction against foreign bodies, etc.

(21) While a simple tumour is to be regarded as an individual—a multicellular organism—a cancer is rather a colony of unicellular individuals.

(22) Cancer is truly described as an infection by cancer cells.

Principles of Treatment.

In estimating the value of any mode of treatment in the case of Cancer two points must be borne in mind. The treatment must be tried in a sufficiently large number of cases to eliminate fallacies due to coincidence, etc., and all cases must be verified histologically by a competent pathologist.

We must also remember that cancers are often surrounded by an inflammatory zone which causes the dimensions of the tumour to appear greater than the actual size. Hence an apparent improvement after treatment of any kind, as shown by a diminution in size, may be entirely due to a diminution in the inflammatory zone with absorption of the products of inflammation while the actual tumour may not have been influenced at all.

It is much to be regretted that the writers and compilers of text books of medicine seem to habitually ignore the subject of Cancer. Cancer, however, has its medical aspects as well as its surgical, and we require more clinical observations on Cancer from the medical point of view.

Since a tumour is a self-contained structure having in itself the power of growth, the most obvious method of treatment is to remove it entirely from the body. In this, the surgical treatment of Cancer, there are several points to be noticed. In the first place cancer cells are themselves infective and if the wound be contaminated with them recurrence is likely to occur. In

removing a cancer, then, care must be taken that the growth is not cut into during the operation. In the next place the growth infiltrates the surrounding tissues to a distance beyond that which can be estimated by microscopic examination. Hence the tumour must be removed with a sufficient margin of healthy tissue. Again Cancer spreads by permeation along lymphatic trunks and the extent of this permeation, in the case of external cancers, is greater in the deep fascia than in the superjacent or subjacent tissues. Hence the deep fascia should be removed to a greater extent than the skin. Mr. Handley, who has made a study of permeation in external cancers recommends that the deep fascia should be removed to an extent of two inches beyond the skin incision.[4] This permeation may extend to the regional lymph glands so that these should always be removed in continuity with the deep fascia and the primary tumour. The permeation also extends to an approximately equal extent in all directions from the primary growth and is not confined to the direction of the lymph current, so that the tissues should be removed to an equal distance all round the original tumour.

When metastasis has occurred the case may be regarded as beyond the limits of surgical operation.

Provided that the operation has included the removal of the whole tumour with its ramifications into the surrounding tissues this mode of treatment offers a prospect of complete cure.

Apart from removal, several attempts have been made to destroy the cancer cells *in situ* by caustics, etc. Unfortunately we do not know of any substance which has an injurious effect on the cancer cells which does not at the same time have a similar effect on the surrounding tissues. Among the caustics may be mentioned Potassium bichromate, and Potassium permanganate, both of which have been recommended. Another agent which has been recommended as having a special effect on cancer cells is Trypsin. This agent, about which we have heard so much, is supposed to act partly by its digestive properties and partly by the action of the associated amylopsin on glycogen.

Apart from attempting to destroy the cancer cells *in situ* we might attempt to starve them by ctting off their blood supply.

It is, however, impossible to do this without at the same time starving the surrounding tissues, because the blood supply of a cancer is derived on all sides from the neighbouring parts. This method, then, is only applicable as a palliative method in rare cases.

If we could detect a substance which was necessary for the metabolism of cancer cells to a greater extent than for the normal tissues we might approach the treatment through this substance. Some people have thought that glycogen is such a substance, but recent researches have shown that glycogen is not present in all tumours and that its presence does not depend on the malignancy so much as on the tissues from which the tumour springs. It is obvious that if glycogen had been essential for the proliferation of the cancer cells we might have attempted the treatment by taking steps for the elimination of the excess of the glycogen.

It is possible that some substance will yet be found through which to approach the subject of treatment.

Mr. Holden Webb, on the basis of his hypothesis that Cancer is due to the crystallisation of cholesterin out of the living cells, suggested the use of hypodermic injections of soap solution with the idea of supplying a solvent for the cholesterin.[9]

Another possible manner of approaching the treatment of Cancer would be to induce the tumour so to alter its mode of growth as to behave as a simple tumour. The tumour would then limit itself and so would be more amenable to surgical treatment. This idea is purely hypothetical as we have no knowledge of the influences which determine malignancy or non-malignancy.

Apart from any mode of treatment directed to the tumour itself we can conceive of modes of treatment directed towards increasing the resisting powers of the surrounding tissues. If we could restore the influences normally existing between the component parts of the tissues involved, we should succeed in causing the proliferation to cease and retrogression to set in. Here again we are met with the difficulty that we are at present totally ignorant of the nature of these influences, but some slight progress has been made chiefly in connection with X rays

and Radium, both of which appear to act by setting up an inflammatory reaction in the surrounding tissues combined with some destructive action on the tumour cells themselves. This method is most applicable in the case of cutaneous cancers, and the X ray treatment of Rodent ulcer and superficial squamous-celled carcinomata is admitted to be of considerable value.

Here also may be included suggested remedies such as Sodium cinnamate, and Sumarate, which produce a general leucocytosis, also Coley's fluid which probably acts in a similar way.

Tonic treatment, especially arsenic, may be expected to raise the general resistance of the body tissues, and cases of amelioration under arsenic have been described. It is interesting to notice in this connection that arsenic has also a considerable beneficial effect on other diseases which are of a progressive nature, such as Hodgkin's disease, Leucocythæmia, Graves' disease, Diabetes insipidus, etc.

Another method which suggests itself is the general hygienic treatment including fresh air, exercise, freedom from worry, suitable diet, etc., which plays such an important part in improving the well-being of the body generally. We know that this method of treatment is proving of great value in infection by the tubercle bacillus and it is, perhaps, worth while to consider whether it would not have a similar effect in infection by cancer cells.

Another possibility in methods of treatment is in the use of extracts of glands which have an internal secretion. It is known that the pituitary, thyroid, and adrenals, have some effect on growth but what that effect is is not yet known. Thyroid treatment has been tried in some cases and at the Christie Hospital we have tried pituitary extract in two cases but without result. Thymus extract has also been tried. Removal of the ovaries and testicles has been tried in some cases of inoperable cancer with apparent benefit in some cases, but we must not forget that in the opinion of some authorities the removal of the ovaries increases the liability to Cancer.

Lastly we have empirical methods of treatment which may be described as modes of treatment tried hap-hazard without

any scientific basis. Such methods are violet leaves, molasses, chian turpentine, etc. We may say that no substance has yet been found that has any effect on Cancer, nor is it likely that any substance will ever be found which has any effect comparable with that of quinine in Malaria since Malaria is due to an extrinsic agent while Cancer is, as we have seen, an infection by cells derived from the body cells, and it is hardly possible to conceive a substance which will destroy the tumour cells without at the same time destroying their near relations, the body cells.

With regard to the effects of these different modes of treatment we can say that, apart from surgical operation, and, in special cases, X-rays or radium, none of the numerous suggested remedies have proved of any permanent value. Cases of amelioration during treatment of various kinds have been described, but further investigation has always shown that these cases of improvement are accidental and cannot be ascribed to the immediate effect of the treatment. Some of these cases of improvement are due to the lessening of the pericancerous inflammation producing an apparent diminution in the size of the tumour.

When the case is operated upon early enough to allow of complete removal we have a fair prospect of complete cure. When, however, it has gone beyond the limits of surgical operation the prospects are at present almost hopeless. Surgery and medicine can still do much in the way of palliative measures but we know of no remedy which will effect a cure.

I may say that all suggested methods of treatment, whatever their origin, are given a fair trial at the Christie Hospital provided that the use of them does not involve danger to the patient.

It appears most reasonable, in considering possible modes of treatment, to direct our attention more towards improving the general condition of the patient so that his tissues may resist the growth of the tumour, rather than to attempting to find a substance which will destroy the cancer cells without destroying the other tissues. It is possible, also, that if we can discover a chemical substance which is necessary for the proliferation of

the cancer cells, we may be able to approach the treatment of Cancer through this substance.

Whether or no we shall ever see a treatment by immunisation remains to be seen. I have mentioned that mice which have recovered from Cancer are immune to that particular cancer and, to a less degree, to other related forms, and, if this mode of treatment ever becomes possible, it would seem probable that it will consist in immunising a patient against his own cancer.

With regard to preventive treatment the only means that can be suggested are ordinary hygienic principles and the prompt treatment of any chronic inflammatory foci that may occur.

Conclusion.

I have now said what I have to say about Cancer. I have considered the pathology of the disease and have indicated the bearing of the facts of pathology on the indications for treatment. I conclude by reminding you that the problem of Cancer is the problem of Growth. When biologists can tell us what are the influences which determine the form and size of the living organism and of its constituent parts, then pathologists will be in a position to determine more exactly the nature of tumours. In the meantime all features in tumours must be investigated and such investigation must not be limited to tumours alone. Other diseases and normal processes must be included in the scope of the investigation, as also problems of chemistry and physics, before we can arrive at a complete answer to the question "What is Cancer?"

APPENDIX.

The Parasitic Theory.

I have not thought it necessary in the lectures to enter into a full discussion of this theory as I went into the matter fully in my Erasmus Wilson Lectures in 1902.[10] The criticisms I then brought forward have never been answered, and it is a curious fact that the upholders of this theory never think it

necessary to answer the criticisms brought against it, while they continue to bring forward again and again the same arguments in its favour. Very few of the leading pathologists have expresed an opinion in favour of the theory that the essential casual agent of Cancer is a parasite. The upholders of the theory are mostly surgeons or bacteriologists who do not appreciate the pathological and biological difficulties which the theory involves.

For the sake of those who are not well acquainted with the discussion which has ranged about this theory I here introduce a brief résumé of the argument.

The grounds on which the theory is based are :—

(1) *The apparent resemblance of Cancer to such infective diseases as Tuberculosis, etc.* I have considered this point in the lectures and I have pointed out that the only argument to be obtained from this resemblance is the argument that the cancer cells themselves are parasites.

(2) *The inoculability of Cancer.* If Cancer were due to a parasite we should expect infection of one person by another to be of frequent occurrence. Such cases are, however, extremely rare, and hardly more than could be explained by coincidence. The venereal growths which are met with in dogs are highly contagious, but it is not certain whether they are to be considered as true tumours or whether they are more allied to granulomata. Microscopically they show a close resemblance to sarcomata but they do not show the same power of infiltrating the surrounding tissues. Even if they be considered as sarcomata the fact that they are contagious is no argument in favour of their being of parasitic origin, since the infecting agents may be the tumour cells themselves.

In the transmission of Cancer from mouse to mouse the new tumour arising is a direct continuation of the growth of the introduced portion and is not due to infection of the tissues of the new host.

(3) *The lesions produced in the rabbit's liver by the coccidium oviforme.* In coccidiosis we find local dilatations of the bile ducts filled with coccidia and epithelial debris. The

younger forms of the parasite are contained within the epithelial cells while the older lie free in the cavity. In no case do we find any lesions at all resembling Cancer. The process appears to be of the nature of a catarrhal inflammation, the infected epithelial cells being cast off and the remaining cells proliferating to take their place. The coccidia are sometimes found in the connective tissue where they give rise to an ordinary chronic inflammation of the fibrous tissue.

(4) *The topographical distribution of Cancer.* Cancer has been supposed to occur endemically in certain localities or certain houses. The evidence, however, is not strong on this point nor are there any resemblances between the circumstances of different cancer districts. Some cancer districts are in valleys, others on hills; some are in moist situations, others in dry deserts, etc. It has been proved that the cells of a mouse cancer can retain their vitality for a long time outside the body under various circumstances and yet be able to proliferate on being introduced into a new mouse. Hence the endemic occurrence of Cancer is in itself no argument for the necessity of a parasitic causal agent.

(5) *The presence of certain cell inclusions, supposed to be of a parasitic nature and the possibility of obtaining cultures of bacteria, etc., from cancers.* It does not appear that any of the numerous observers in this field agree with others as to what the cancer parasite is. Bacilli, cocci, protozoa, blastomycetes, and moulds have all had their day. Each new observer points out the mistakes made by his predecessors and then brings forward a new parasite to be, in its turn, demolished by his successors. The inclusions described as parasites include various forms of degenerative changes (hyaline, colloid, vacuolation, etc.), archoplasmic vesicles and centrosomes, extruded nucleoli, detached portions of nuclear chromatin, and, in all probability, globules of cholesterin. As regards cultivation experiments the same difficulties arise. There is no doubt that organisms can be cultivated from cancers in some cases, but there is no evidence that they have anything to do with the causation of Cancer. A large number of different bacteria and blastomycetes have been cultivated at different times, but no one has yet succeeded in repro-

ducing undoubted Cancer on inoculating animals with the cultures of the suspected organisms.

Thus the grounds on which the theory is based are wholly inadequate. There are numerous other objections to the theory.

(6) *It is entirely unnecessary.* All the phenomena of Cancer can be explained on the supposition that the cancer cells are themselves the infecting agents. As I have pointed out, the capacity for proliferation is an inherent property of the cell as it is of all living organisms and it requires no parasitic theory to explain it.

(7) *The theory will not explain the origin of Cancer.* We know of no parasites which are capable of producing a primary proliferation of cells. The first effect of any irritant is destruction or injury to the cells. There is no evidence that in Cancer there is any initial injury. Even if we admit the existence of a parasite which produces a primary cell proliferation this would not explain Carcinoma, since the essential feature in Carcinoma is penetration of the epithelial cells into the connective tissue spaces.

(8) *The theory will not explain the growth of Cancer.* The reaction against any irritant, *e.g.*, Bacillus tuberculosis, is a centripetal proliferation of the tissue cells towards the irritant, whereas in Cancer the growth is centrifugal into the surrounding tissues.

(9) *It will not explain the site incidence of Cancer.* For example, it will not explain why the small intestine is so rarely the seat of primary Carcinoma, nor why the acini of the breast are more frequently affected than the ducts, nor will it explain why the breast and uterus are more frequently affected than other organs. In the case of Sarcoma we should have to assume that the parasites are conveyed to the site of origin by the blood, and in that case we should expect to find that multiple primary growths were more common than they are.

(10) *It will not explain why there is an almost complete immunity to Carcinoma in the first twenty years of life.*

(11) *It will not explain the congenital tumours.*

(12) *It will not explain the occurrence of mixed tumours,*

such as the chondrosarcomata, etc., and especially the blastocytomata.

(13) If all forms of Cancer are supposed to be due to the same parasite it is impossible to explain why metastatic growths always resemble the primary. We should expect, for instance, that a carcinoma would sometimes give rise to sarcomatous metastatic growths, and we should also expect that, if a carcinoma of the breast gave rise to a metastatic nodule in the liver, the latter would show the characteristics of a hepatic carcinoma, etc.

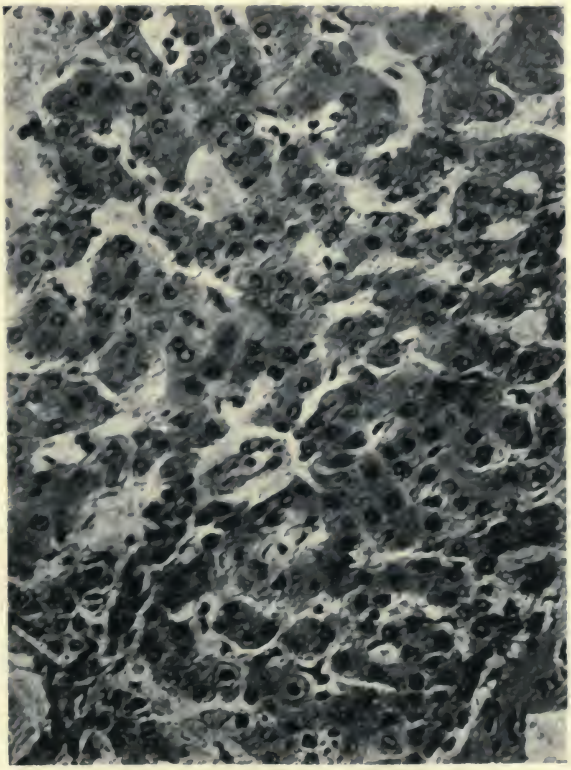
If, on the other hand, each kind of cancer has its own parasite we are met with the difficulty of the infinite variety of cancers. We should have to assume different parasites for all the different species of Carcinoma and Sarcoma, and we should have to imagine that each organ and tissue in the body has its own series of cancer parasites, and, moreover, that each species of animal has a different series of cancer parasites to every other animal.

(14) It is not usually contended that simple tumours are due to parasites, but, if they are due to extrinsic causal agents these agents must be of a parasitic nature since a continued and increasing growth demands a continued and increasing causal agent, if any agent is considered necessary. If it be contended that simple tumours are not due to extrinsic agents, then I answer that there is no justification whatever for separating the malignant tumours from the simple, and to say that while the simple are due to intrinsic factors alone, the malignant are due to the action of parasites.

We see then that the parasitic theory will not explain any of the phenomena, and that it vastly increases the difficulty of explanation.

We can say, then, that Cancer is not due to a specific parasite or parasites, but, on the other hand, we can say that the cancer cells themselves act as parasites. This latter view will explain all the phenomena of Cancer.

Fig. 1.



Tissue Tumour. Adenoma of the Liver.

This is composed of cells, resembling hepatic cells, arranged in columns as in the normal liver. The tumour from which the section was taken was about 8 inches in diameter and was surrounded by a capsule. Throughout the whole tumour there was no arrangement of the cell columns into lobules and no ducts were found in any part of the growth.

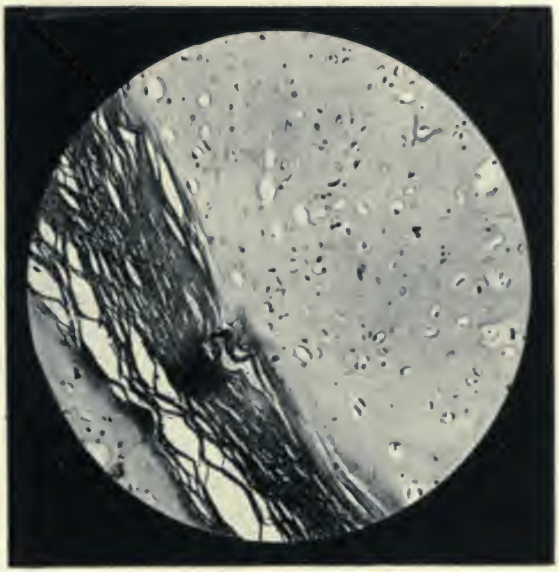
Fig. 2.

Cell Tumour. Carcinoma of the Liver.

This is composed of cells, resembling hepatic cells, arranged atypically, showing no arrangement into columns as in the adenoma (Fig. 1).

396 b

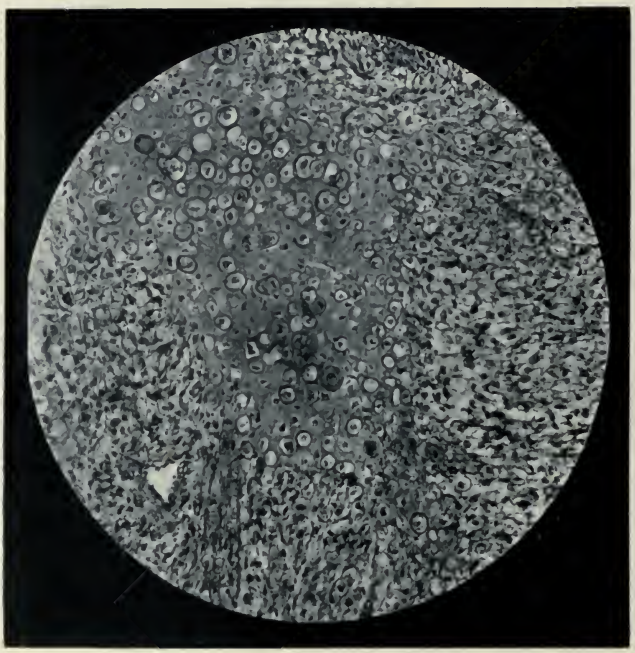
Fig. 3.



Tissue Tumour. Chondroma.

The nodules of cartilage, of which this tumour is composed, are everywhere surrounded by fibrous tissue.

Fig. 4.

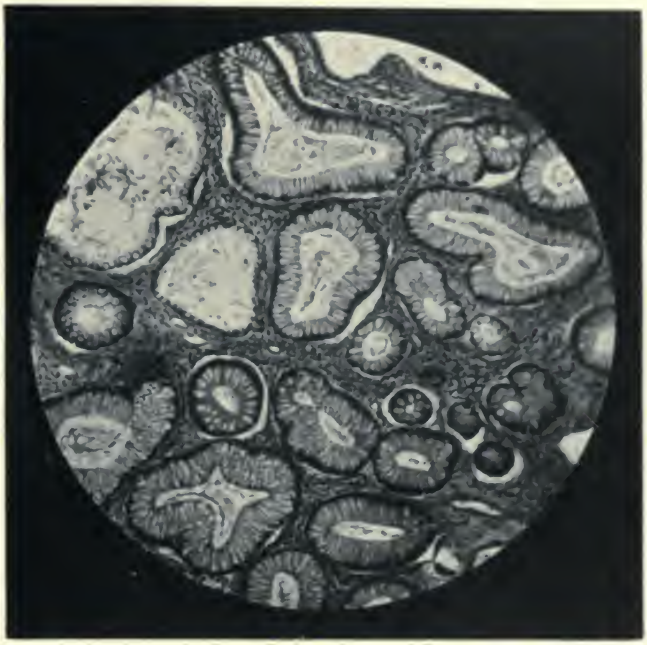


Cell Tumour. Chondrosarcoma.

The nodules of cartilage are not sharply marked off from the surrounding sarcomatous tissue, but there is a gradual transition from one to the other, the sarcoma cells themselves becoming chondrocytes, thus giving rise to the cartilage as a secondary product.

396 e

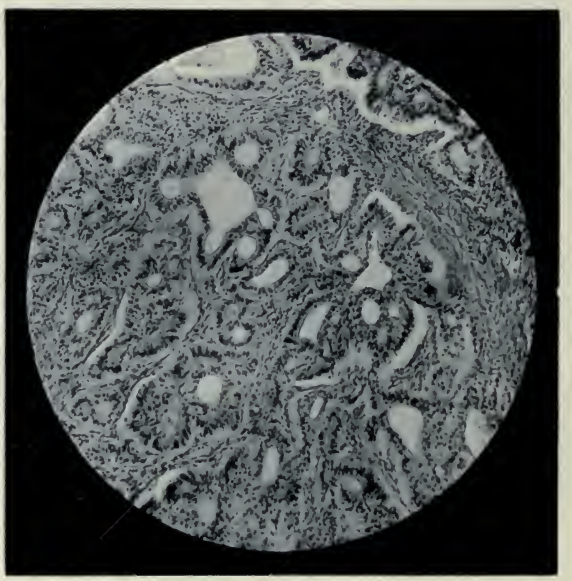
Fig. 5.



Tissue Tumour. Adenoma of the Rectum.

The epicytes are everywhere arranged in definite tubes and sharply marked off from the surrounding stroma. There is no infiltration.

Fig. 6.



Cell Tumour. Carcinoma of the Rectum.

In this part of the tumour the structure somewhat resembles that of an adenoma. The tubes are, however, more irregular and in some places they are lined by several layers of cells.

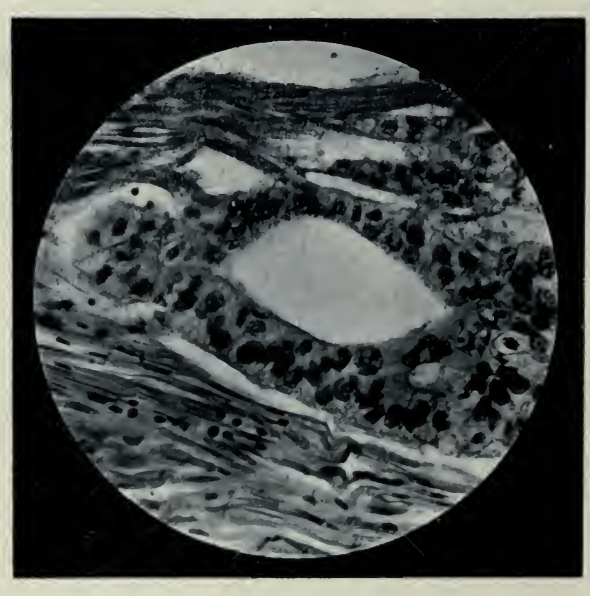
396 d

Fig. 7.

Cell Tumour. Carcinoma of the Rectum. From the same section as Fig. 6

This shows solid columns of epicytes penetrating the surrounding connective tissue, the tubes being of secondary formation.

Fig. 8.

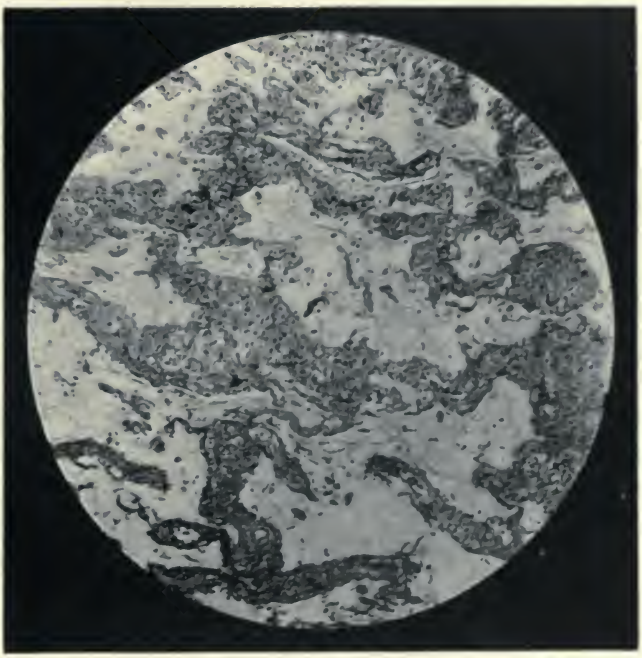


Cell Tumour. Carcinoma of Rectum. From the same section as Figs. 6 and 7.

This is a portion of Fig. 7 photographed with a higher power. It shows the formation of a lumen in a solid column of epicytes. Above are seen two other solid columns of cells penetrating the connective tissue.

396 e

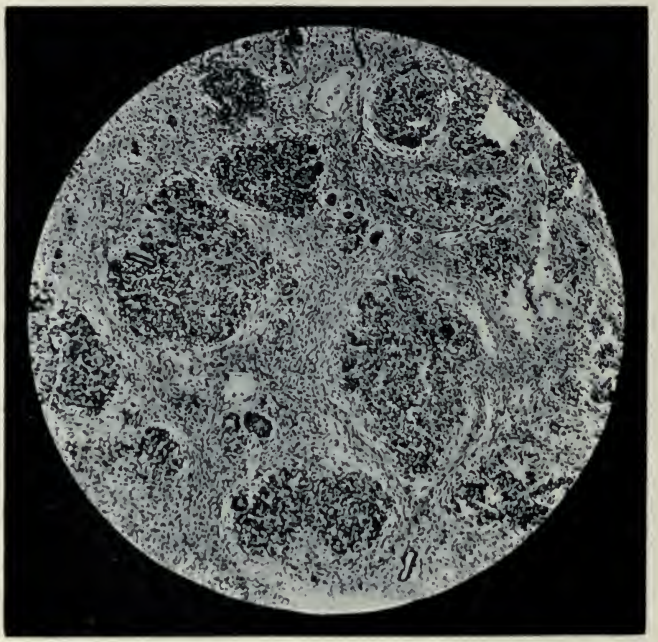
Fig. 9.



Angeioma of the Liver. (From Dr. Mantle's specimen.)

There are groups of hepatic cells in the septa between the cavernous spaces.

Fig. 10.

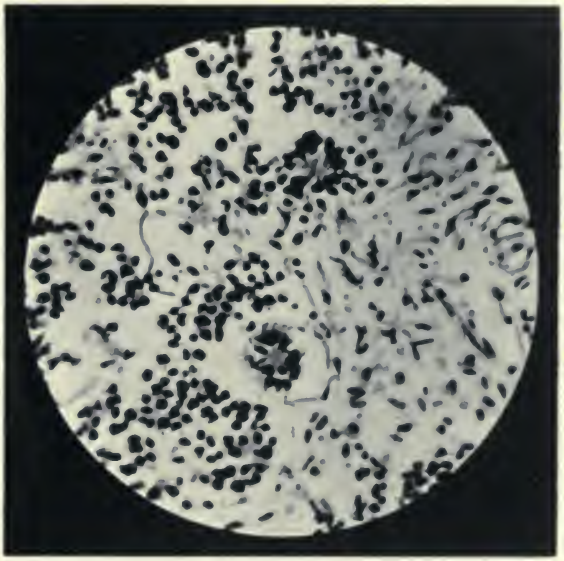


Blastocytoma of the Kidney. Low power.

The section shows groups of small round cells in which are embedded epithelial tubes. There are also strands of spindle cells running between the groups of round cells. Other parts of the tumour contained mucous tissue and smooth and striated myocytes.

396 f

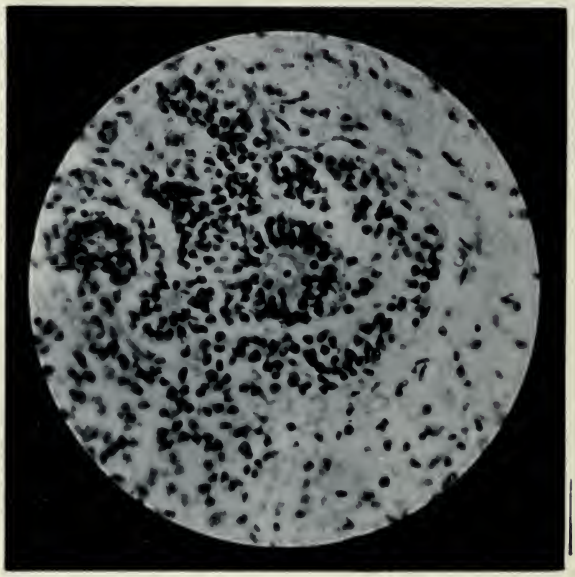
Fig. 11.



Blastocytoma of the Kidney. High power.

This shows the earliest stage of the formation of epithelial tubes from the round cells. In the upper part of the section is seen a group of the small round fundamental cells. Below this is another group slightly more advanced showing the commencement of the formation of a lumen.

Fig. 12.

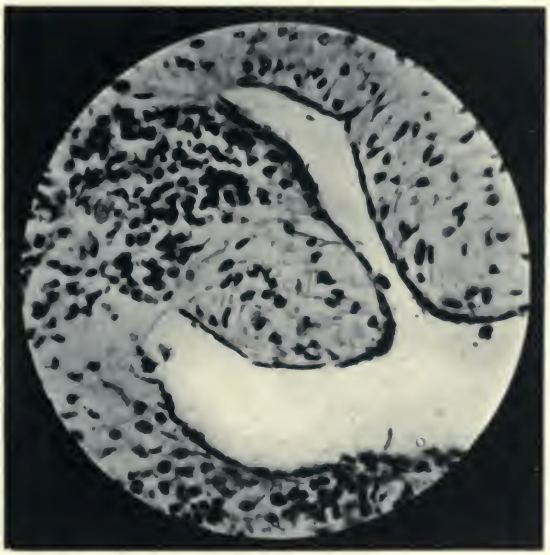


Blastocytoma of the Kidney. High power.

This shows a later stage in the formation of epithelial tubes. In the centre of the section is seen a group of cells with epithelial characters surrounding a lumen which contains débris and a detached cell.

398

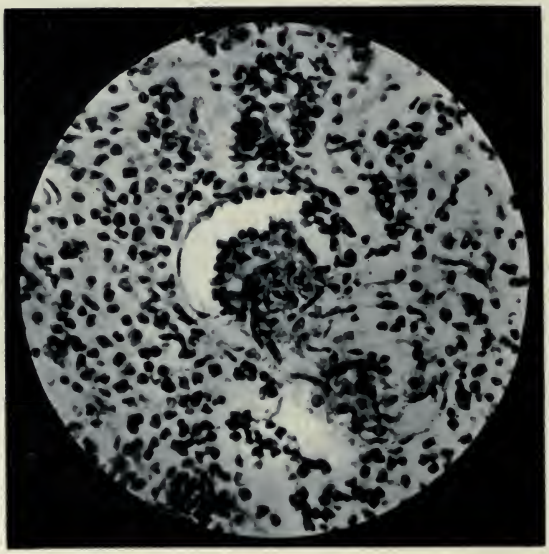
Fig. 13.



Blastocytoma of the Kidney. High power.

This shows a space lined with epicytes surrounded by mucous tissue. To the left is a group of the fundamental cells. There is no sharp demarkation between the epithelial cells, the mucous tissue cells, and the fundamental cells, all being connected together by cell-processes.

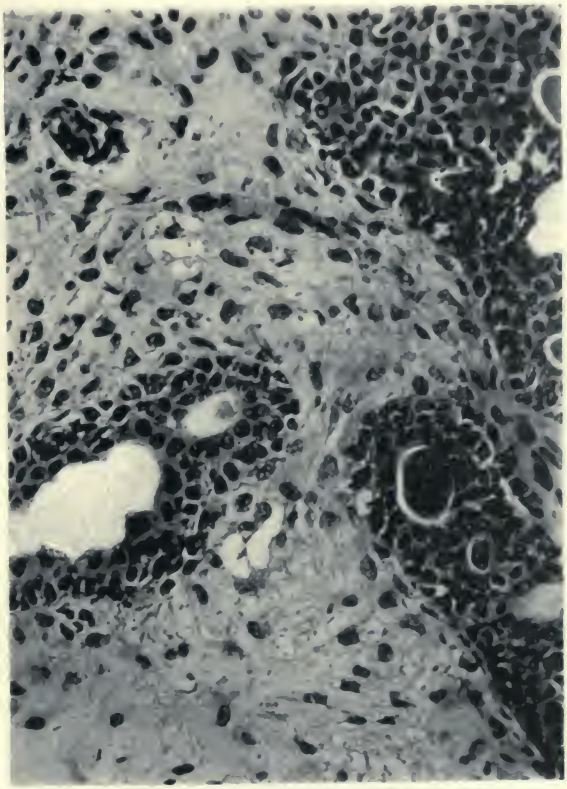
Fig. 14.



Blastocytoma of the Kidney. High power.

This section shows the invagination of one side of an epithelial tube to form a glomerulus-like structure.

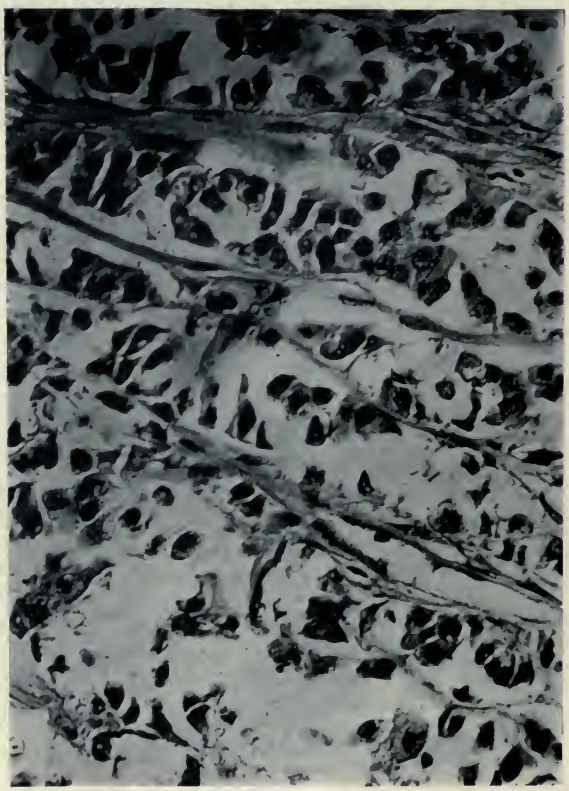
Fig. 15.



Blastocytoma. Parotid Tumour.

This section shows several groups of cells, embedded in which are epithelial tubes, some of which contain gelatinous material. The groups of cells are separated by areas of mucous tissue. There is no sharp demarkation between the different kinds of cells, the epithelial cells and the mucous tissue cells both passing gradually into the intermediate fundamental cells.

Fig. 16.

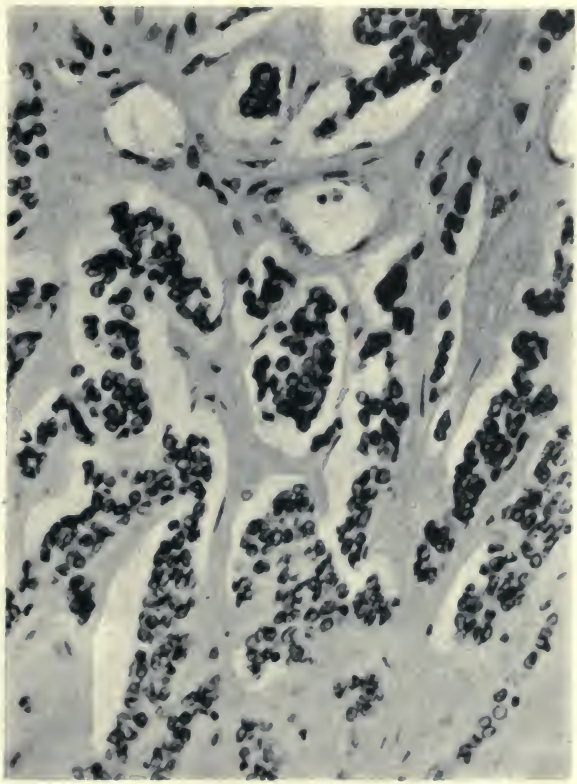


Primary Carcinoma of the Femur.

The cells in this tumour are of the epithelial type and, in places, are typically columnar in shape. There were no growths elsewhere in the body.

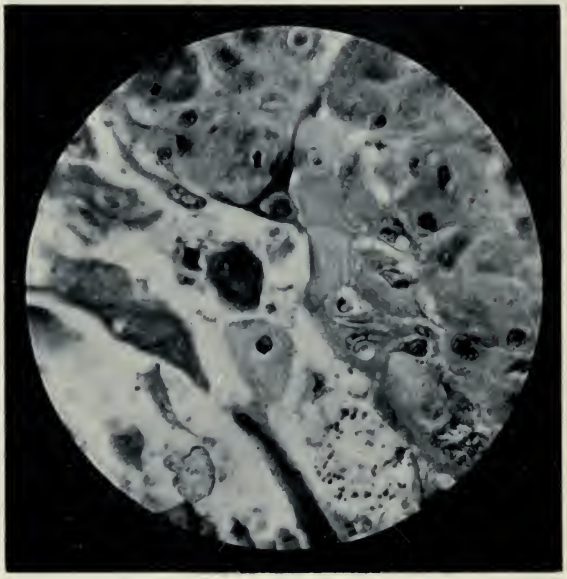
396 i

Fig. 17.



Primary Carcinoma of the Pleura. From a child aged 2. This is a typical spheroidal-celled carcinoma.

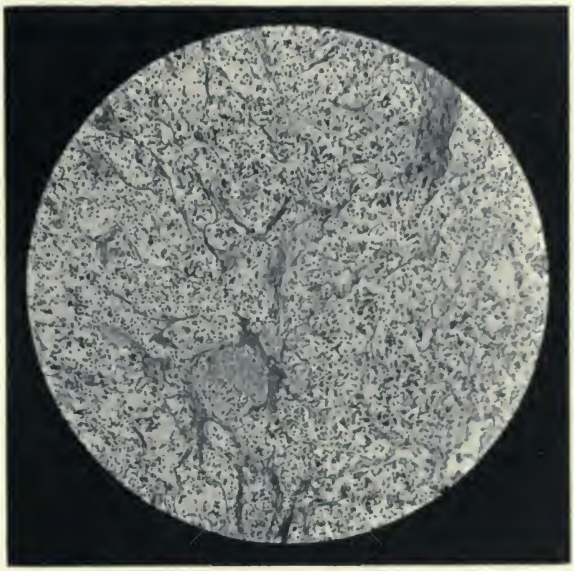
Fig. 18.



Primary Carcinoma of a Rib.
This shows typical squamous cells with prickles.

396

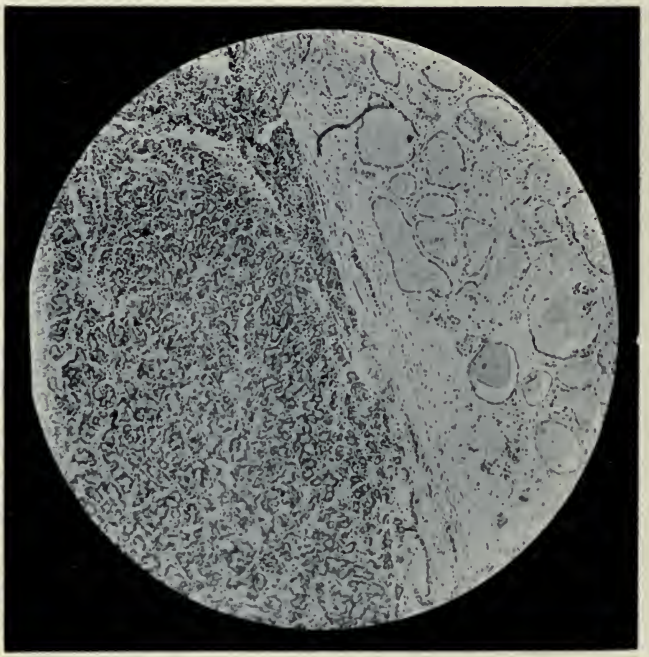
Fig. 19.



Sarcoma of the Neck. From a guinea pig.

This formed a tumour the size of a marble in the subcutaneous tissue of the neck. There was a similar growth in the neighbourhood of the pancreas.

Fig. 20.

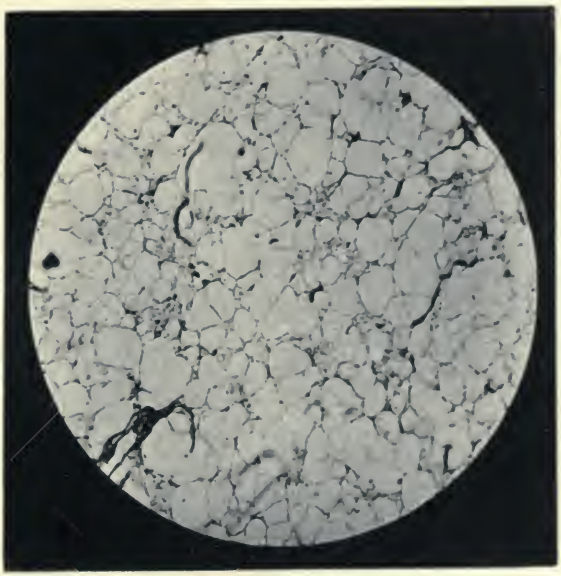


Carcinoma of the thyroid. From a mouse.

The dilated vesicles of the thyroid body are seen on the right of the photograph, the carcinoma being to the left. There were secondary tumours in both axillæ. Some of the tubes in the primary and secondary tumours contained some colloid secretion.

396 k

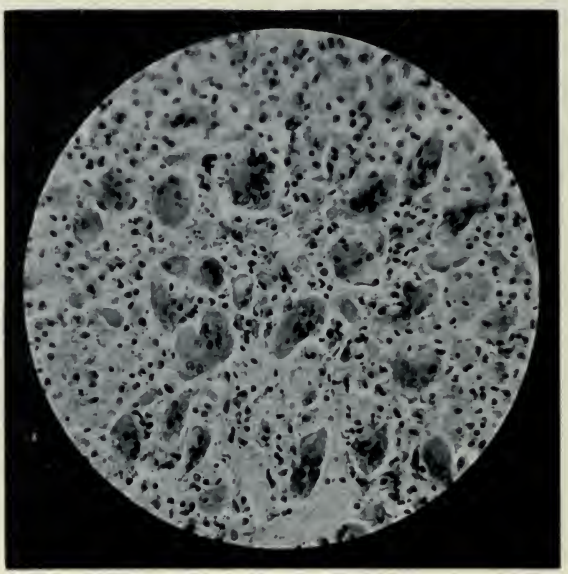
Fig. 21.



Lipoma From a parrot.

This was a large tumour in the subcutaneous tissue covering the pectoral muscles. It shows the typical structure of a lipoma.

Fig. 22.



Giant-celled Sarcoma of the Femur. From a drake.

This is a typical giant-celled sarcoma. There were secondary growths in the liver.

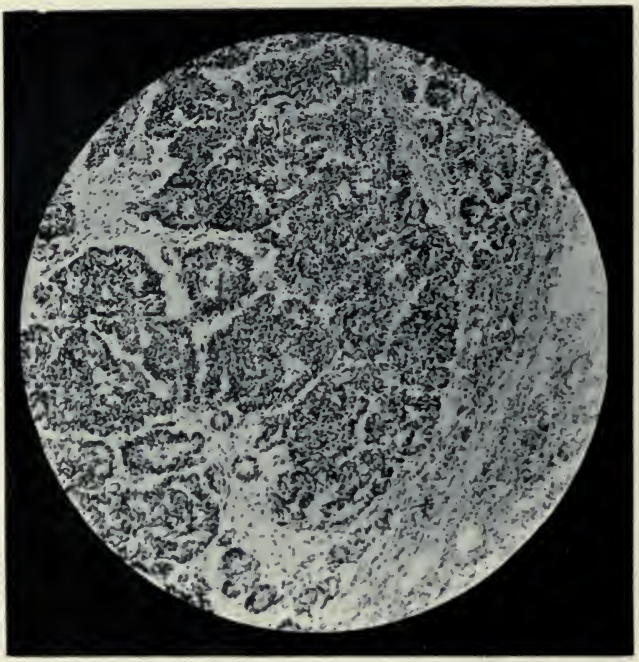
396 l

Fig. 23.

Carcinoma of the Kidney. From a rabbit.

There are several nodules of growth in the upper pole of the kidney.

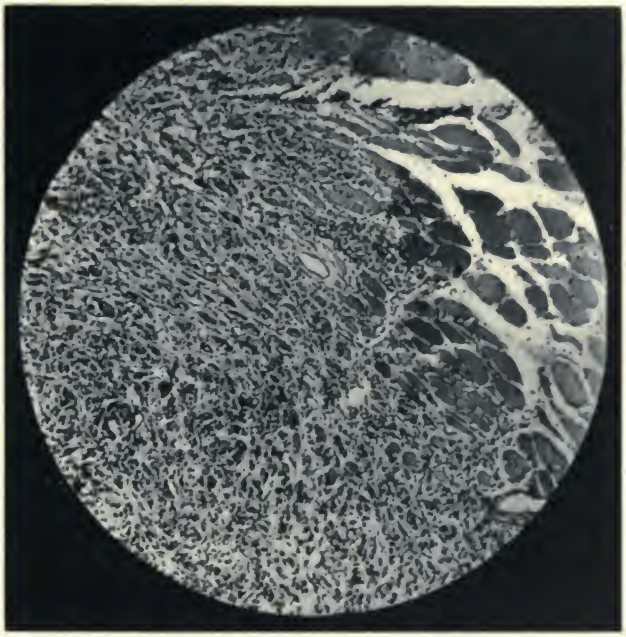
Fig. 24.



Carcinoma of the Kidney. From a rabbit.

This is a photograph of a section of the tumour shown in Fig. 23. It is a columnar-celled carcinoma.

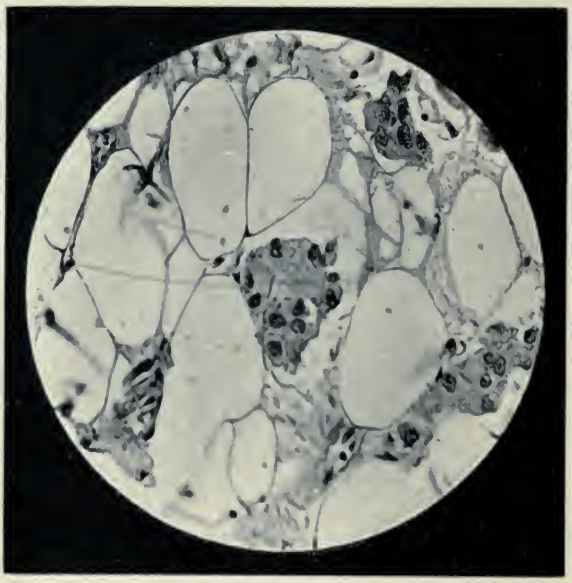
Fig. 25.



Carcinoma of the Breast, infiltrating the Pectoral Muscle.

This shows the carcinoma cells penetrating between the muscle fibres, causing them to undergo atrophy *in situ*.

Fig. 26.

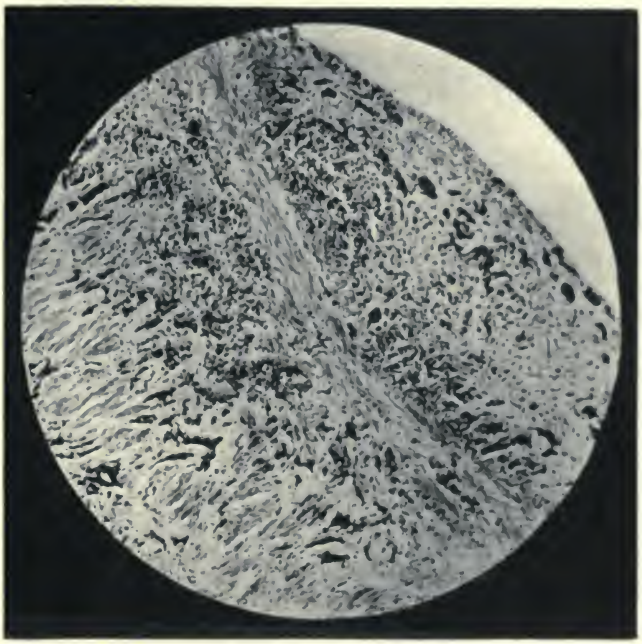


Carcinoma of the Breast invading fat.

The carcinoma cells are proliferating within the fat cells.

396 W

Fig. 27.



Carcinoma infiltrating the wall of a large vein and forming a growth in the intima.

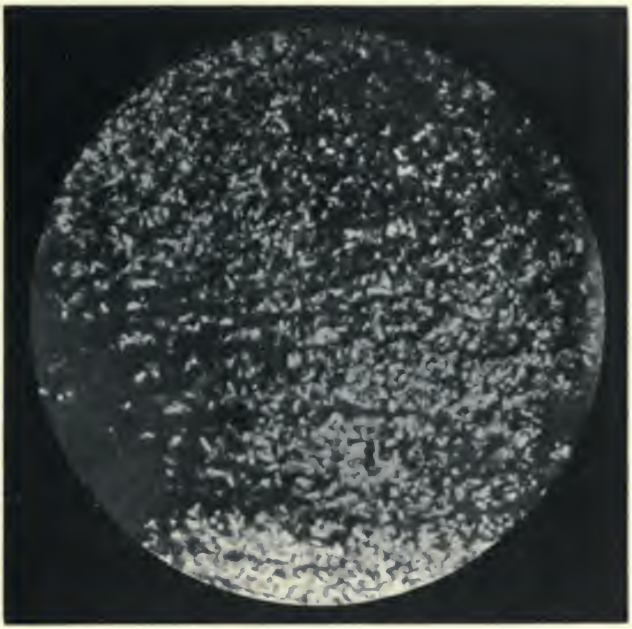
Fig. 28.

Carcinoma of the Breast. Polarised light.

The section has been heated and allowed to cool. Numerous anisotropic globules are seen appearing as bright globules divided into four parts by a dark cross. These were lying in and among the carcinoma cells which are not seen by this method of illumination.

396 0

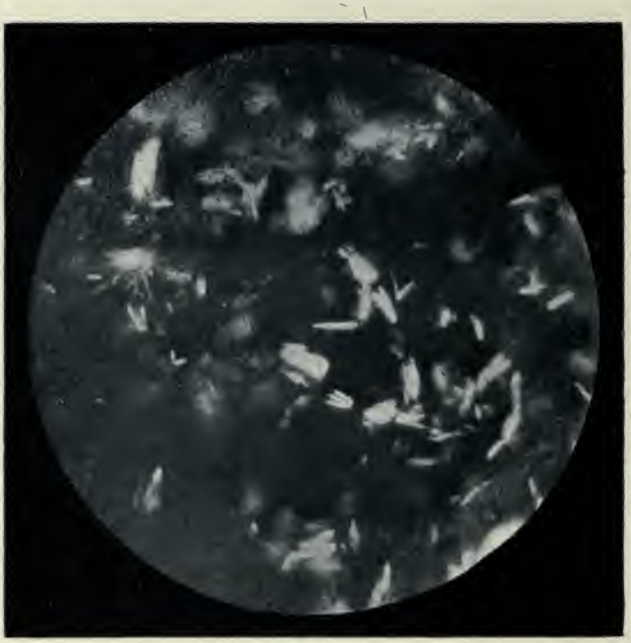
Fig. 29.



Normal Adrenal body. Polarised light. Low power.

The cells of the cortex are filled with numerous crystals appearing bright on a dark background.

Fig. 30.

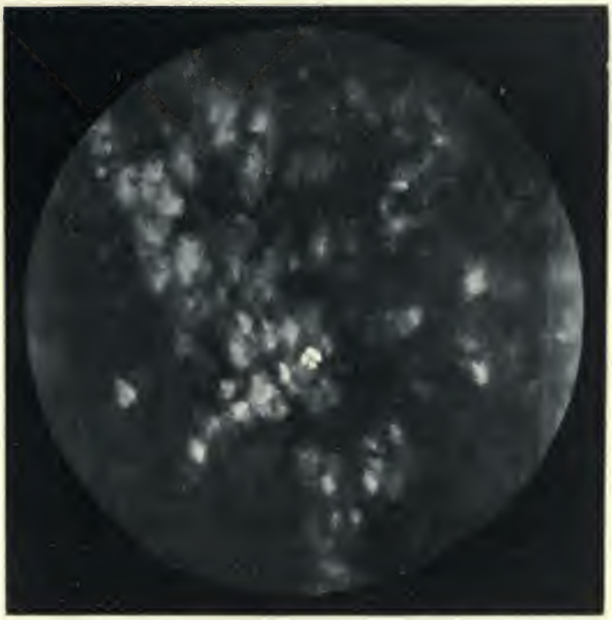


Normal Adrenal body. Polarised light. High power.

This is from the same section as Fig. 29 and shows the characters of the crystals in the adrenal cortex.

346 P

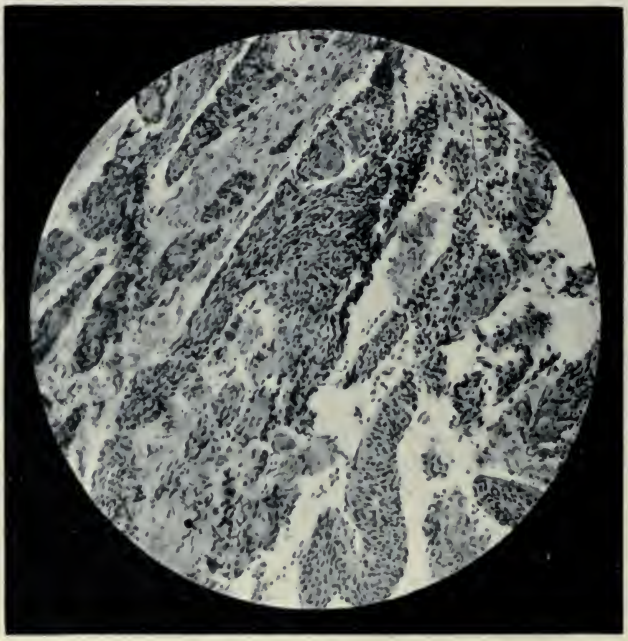
Fig. 31.



Normal Adrenal body. Polarised light. High power.

This is from the same section as Figs. 29, 30. The section has been heated and allowed to cool and the photograph shows the presence of anisotropic globules instead of crystals. Only one globule is in focus. Compare with Fig. 28.

Fig. 32.

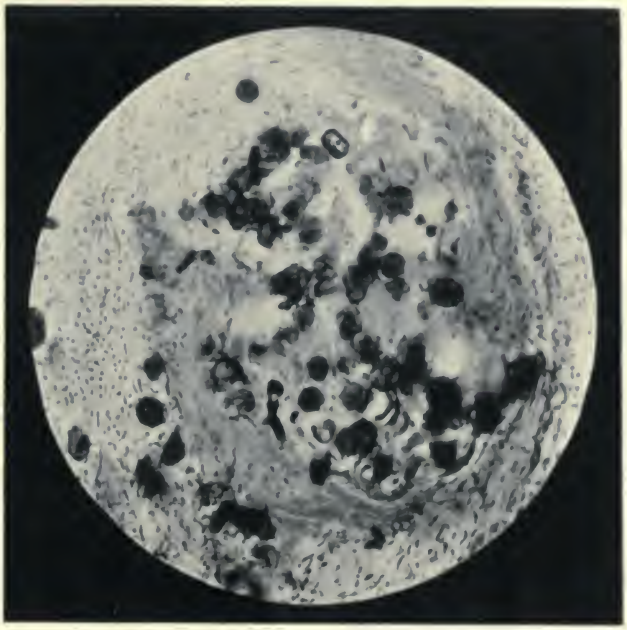


Bilharzial Carcinoma of the Bladder. (From Dr. Harris' specimen.)

This section shows a typical carcinoma of the bladder. No ova were found in the tumour itself.

396 9

Fig. 33.



Bilharzial Carcinoma of the Bladder. (From Dr. Harris' specimen.)

This section is from the connective tissue in the neighbour hood of the tumour and shows numerous ova.

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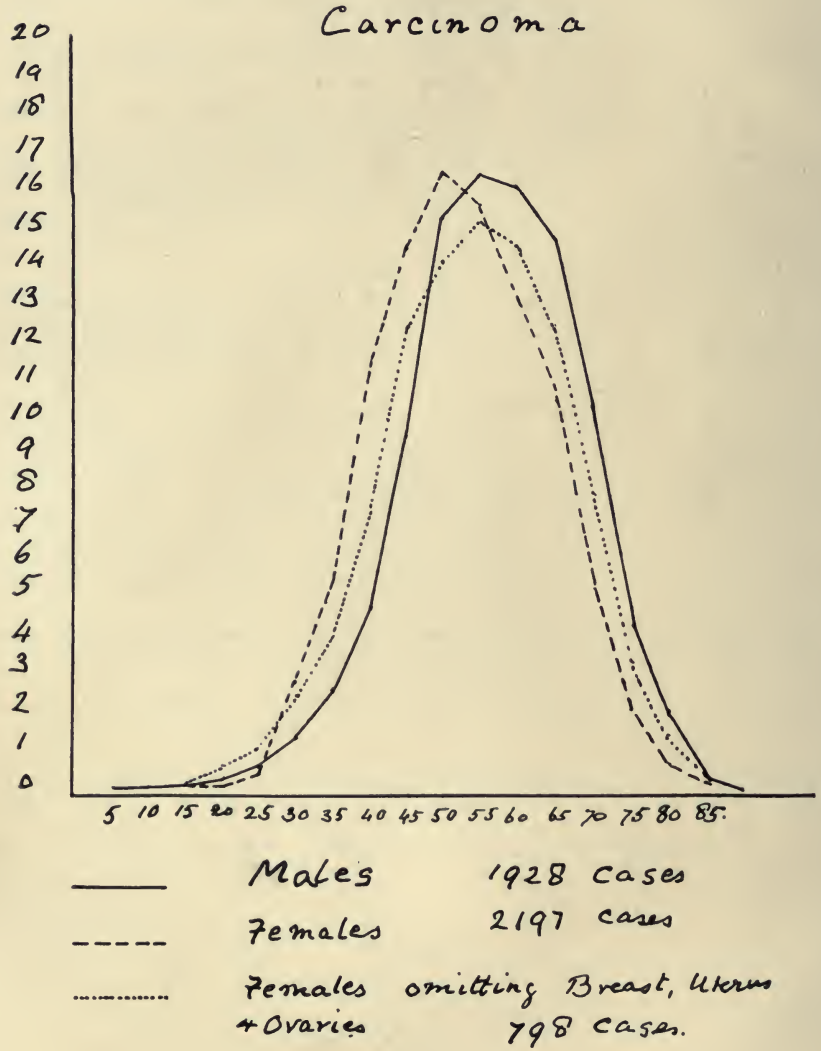
Carcinoma
20
19
18
17
16
15
14
13
12
11
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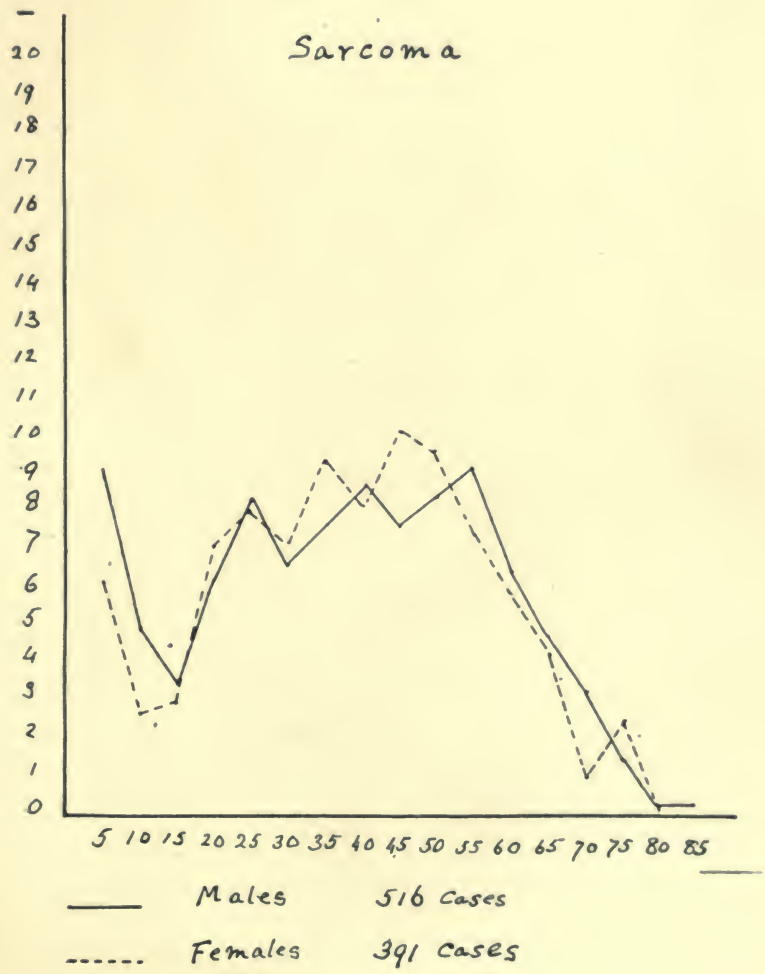
9
8
7
6
5
4
3
2
1
0
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85
Males 1928 cases
Females 2197 cases
Females omitting Breast, Uterus & Ovaries 798 cases.

CHART 1.


Sarcoma
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19
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16
15
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8
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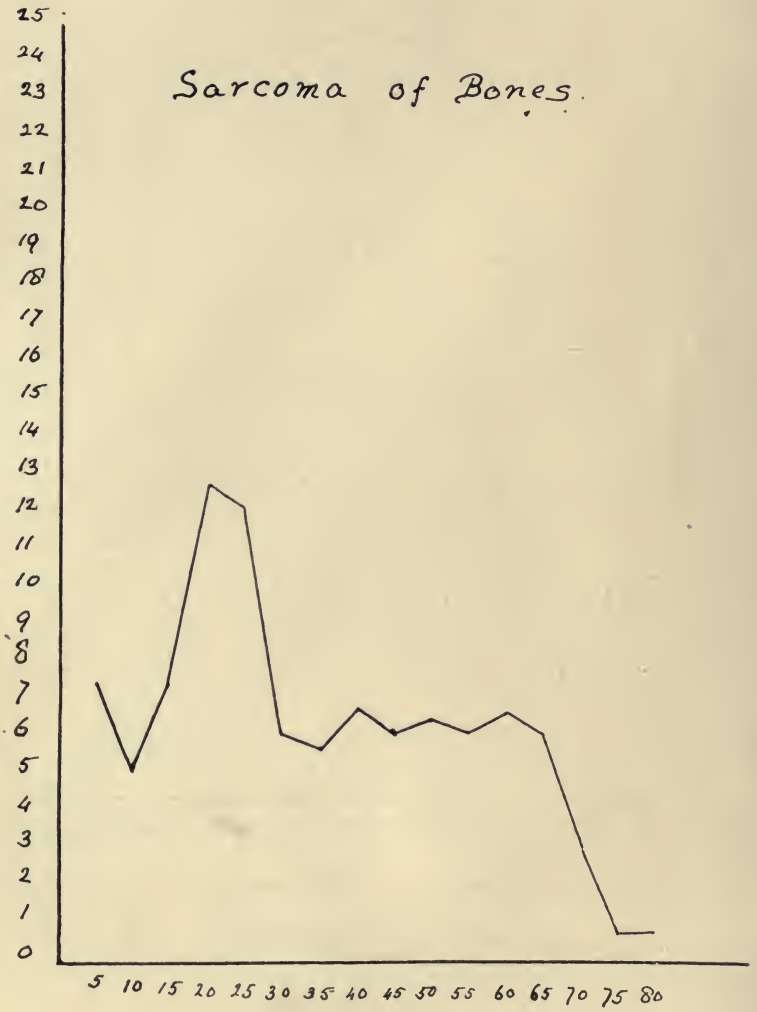
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85
Males 516 Cases
Females 391 Cases

CHART 2.


Sarcoma of Bones.
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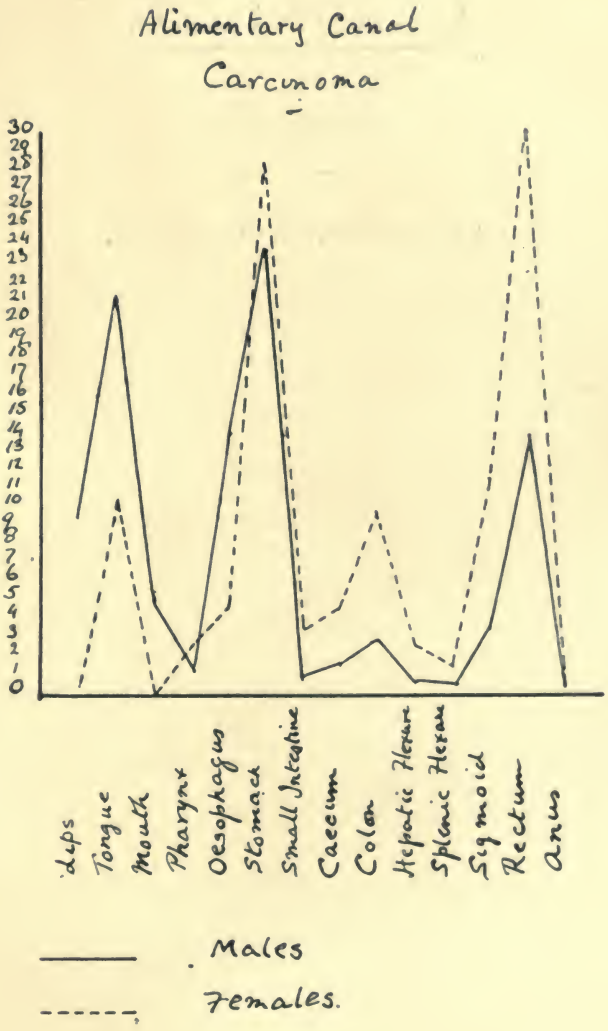
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

CHART 3.


Alimentary Canal
Carcinoma
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29
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19
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15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Lips
Tongue
Mouth
Pharynx
Oesophagus
Stomach
Small Intestine
Caecum
Colon
Hepatic Flexure
Splenic Flexure
Sigmoid
Rectum
Anus
Males
Females.

CHART 4.

CHRONICLE.

Medicine.

Rheumatismus Tuberculosus.

Esau (P.). *Muench. med. Wochen.*, 1908, No. 8.

The peculiar characters of this form of joint affection were first fully described by Poncet in 1897 but did not meet with much acceptance outside of France. More recently, Poncet's conception has received some support from a number of German writers though others dissent from it. The writer brings forward a case which, though its tuberculous nature was not conclusively proved, appears to belong to this group.

The child, aged 5, when first attacked, came of a healthy family without evidence of tuberculous or luetic taint, had been suckled by a healthy wet-nurse, and had had no infectious disease. A small suppurating gland had been opened at one time. The trouble began in one knee after a fall and extended to the other knee, both ankles, one hip-joint, and the cervical spine. There was from time to time high fever and considerable impairment of general health. The surface temperature over the knee-joints was increased. There was no effusion when the case came under observation. The course of the joint affection was towards marked contracture, and recovery was attended with firm fibrous ankylosis in the case of the knees, complete restoration of joint function in the ankles and spine, and bony ankylosis at the hip.

As regards the cause of the condition, there was no other evidence of tubercle, but the possibility of a latent tuberculosis could not be excluded. Hæmophilia could be excluded with certainty and the characters of polyarthritis were absent. In the absence of effusion proof by inoculation was not obtained, and the tuberculin test was not applied.

Poncet and Leriche distinguished two types, a peripheral and a vertebral. The morbid anatomy, according to Poncet's investigations, is that of a simple sterile inflammatory process causing severe changes in the joints. The tuberculous toxine, in a manner similar to that of the gonococcus, rapidly disorganises the articular cartilages, resulting later in changes similar to those observed in gonorrhœal joint affections.

As regards prognosis Poncet and Leriche recognise two classes of case: (1) a favourable form, chiefly synovial, generally with effusion into the joint and usually ending in fairly complete recovery; (2) a much more virulent form, periarticular, with involvement of the bone, no effusion, and marked tendency to ankylosis.

As to treatment, great benefit was derived in this case from passive hyperæmia, especially the use of a large suction apparatus. The writer has hopes of this method especially if applied in the early stages and combined with suitable orthopædic and other measures. G. R. Mill.

Pneumohydrothorax in a Boy two years old—Recovery.

Huber (F.). *Archives of Pediatrics,* February, 1908.

The child had been ill for six days before admission with fever, vomiting and cough, with yellow expectoration. Attacks of coughing recurred at frequent intervals followed at times by vomiting, and dyspnœa had been present from the beginning. The typical signs of left pneumohydrothorax were present, the distinctive signs of effusion plus air being (1) a strict horizontal upper line of flatness in any position, and (2) an immediate change of level with every change of position. Repeated examinations of the sputum for T.B. were negative. Puncture was not indicated, and was thought to be inadvisable owing to the probability of an open communication with the lung.

G. R. Mill.

Case of so-called Cyclic Vomiting with Hepatic Insufficiency.

Saunders (E. W.). *Archives of Pediatrics,* February, 1908.

The writer reports the case of a child who had had, from the age of ten months to that of three years, repeated attacks of severe vomiting and gastro-intestinal disturbance. Fever was generally slight or absent during the attacks which were characterised by uncontrollable vomiting, great depression, irritability and insomnia. The urine contained acetone and there was an acetone odour of the breath. There was no note of the stools till the ninth attack (July, 1906), after which abdominal distension persisted with clay-coloured stools, irregular vomiting, fever and loss of weight. There was no evidence of malaria or tuberculosis. The skin was not icteric and there were no bile salts in the urine; the liver was not enlarged. The condition was decided to be one of acholia. The child was put on sodium glycocholate (2 grains) and zinc sulphocarbolate ($\frac{1}{4}$ grain); improvement was rapid and marked, and since then there had been no genuine paroxysm. On several occasions when the odour of the breath and general demeanour gave warning, a purge and

alkalies served to ward off the attack which they had not formerly done. The association in this case of recurrent vomiting with hepatic insufficiency is brought forward as a suggestion to other workers. Repeated examination of the urine in a previous attack failed to show indican.

G. R. Mill.

A Discussion on the Etiology and Epidemiology of Typhoid Fever.

Seaton (E. C.), Davies (D. S.), Hall (I. Walker), Richards (H. Meredith), Brincker (J. A. H.), Hamer (W. H.), and others. *Proc. Roy. Soc. Med.*, March, 1908, p. 179.

This diffusive discussion, opened by the reading of four papers on different aspects of the etiology of enteric fever, is of great interest. Dr. Seaton in his contribution wonders whether in the mass of typhoid dealt with every year we may not be thinking of polluted water too much, to the neglect of other more tangible and immediate sources of mischief. Drs. Davies and I. Walker Hall report fully the outbreak at the Brentry Reformatory which from their investigation seems to have been very probably due to a 'carrier' case. An outbreak of typhoid which had persisted in spite of the adoption of many precautions ceased twelve days after the withdrawal of a certain Mrs. H. from the kitchen and dairy. This was in November, 1907; Mrs. H. had had typhoid fever in January, 1901; she began work at Brentry in April, 1906, and the outbreak began in September, 1906. Her blood gave a complete agglutination reaction in a 1—10 dilution, and an incomplete reaction in 1—25. At first no B. typhosus was found in the urine or fæces, but in December, 1907, typical typhoid bacilli were found. Lastly an epidemic of typhoid was found to have occurred in 1904 at Grove House Home, Brislington, which persisted till the Home was closed, and at this place Mrs. H. had been employed in the kitchen.

On the general question of typhoid carriers it may be noted that German writers recognise (1) 'acute carriers' who have shown no symptoms but after being a short time in contact with patients, may carry and excrete bacilli for a short time; (2) 'chronic carriers' who have, a short or long time before, gone through a regular attack of typhoid and may excrete for months or years typhoid bacilli.

About 4 per cent. of patients appear to become carriers; the condition is more common in women and the bacilli are frequently harboured in the bile in the gall bladder and may persist as long as twenty-nine years.

It must be remembered that these carriers have long intermittent periods in which no excretion of typhoid bacilli takes place. Of course only gross uncleanliness lends to food contamination.

Drs. Meredith Richards and Brincker deal with an interesting case of contamination of a well in the chalk, which was first brought to notice by the change in the analysis of the water, the bacterial colonies per cc. rising from 10 to 3,820. It was known that surface water sank rapidly at a spot two miles away from the well and the result of placing 1½ tons of salt at this spot was a rise in the chloride contents of this well twenty-nine and a half hours after the beginning of the experiment. This was repeated later, salt being washed into the suspected site, the chloride figure rising twenty-two and a half hours later. Further experiments were made in washing in a large quantity of a non-pathogenic chromogenic river organism. This was recovered about seventy hours later from the well water.

Dr. Hamer criticises the evidence in favour of the causation of typhoid fever by the typhoid bacillus.

A discussion followed in which many well-known hygienists took part.

MILES B. ARNOLD.

Recent Researches into Etiology of Plague in India.

BANNERMAN (W. B.). *Edinburgh Med. Journ.*, May, 1908.

PNEUMONIC plague is highly contagious, but being rare (less than 3 per cent. of all cases) plays a very small part in the spread of the disease. Bubonic plague in man is not infectious, and is entirely dependent on the disease in the rat. The infection is conveyed from rat to rat, and from rat to man, solely by means of the rat-flea. Plague is usually conveyed from place to place by rat-fleas brought by people in their luggage or on their persons.

E. M. BROCKBANK.

Dissociation and Antagonism of the Cutaneous and Tendon Reflexes.

NOICA (M.). *La Presse Médicale*, March 25th, 1908.

VAN GEHUCHTEN has pointed out that, in lesions interrupting the course of the cortico-spinal fibres, the cutaneous reflexes usually examined (plantar, cremasteric and abdominal) are not merely diminished, but often disappear altogether, whilst the tendon reflexes are exaggerated. He therefore concludes that the two sets of reflexes have a distinct anatomical basis. Babinski does not agree with this conclusion, and bases his opinion on the persistence of certain cutaneous reflexes, other than those mentioned above. The writer is also unable to accept Van Gehuchten's view, and points out that if a case, in which there is originally a flaccid paralysis, be followed out for months

or even years, the tendon reflexes are the first to return, and that they may even become markedly exaggerated before the re-appearance of the skin reflexes, but that the latter do ultimately become re-established. This is well seen in young subjects, as, for example, in children attacked with hemiplegia or diplegia. The re-appearance of the cutaneous reflexes is seen in cases of hemiplegia of cortical origin as well as in those of spinal paraplegia; and the observation is supported by Sherrington's experiments in monkeys, in which section of the cord was followed by gradual re-establishment of the skin reflexes. Moreover, the author has observed that intraspinal injection of cocaine or stovaine causes disappearance of the cutaneous before the tendon reflexes, so long as the dose used is a small one. With large doses, both sets of reflexes disappear together. Other observers have noted the same course of events in chloroform anæsthesia.

JAS. W. RUSSELL.

Two Simple Methods of Disinfection by means of Formic Aldehyde (Acetane and Permanganate of Potash-Formaline).

RILLIET (F.). *Revue Médicale de la Suisse Romande,* May 20th, 1908, p. 358.

THE advantages of these methods of gaseous disinfection are simplicity in use, safety from the danger involved in leaving a burning lamp in a closed room, and the reduction of staff-required for the manipulations involved in most disinfections. The great disadvantage is the comparatively heavy cost of the powders used.

Autane, an amorphous yellowish powder, is a mixture of one part of paraformaldehyde to two parts of metallic higher oxides, chiefly of barium. On adding a proportion of warm water to the dry powder, a reaction takes place, formic aldehyde is set free, and the heat generated evaporates most of the water.

In the second method a mixture of equal parts of the 40 per cent. solution of formalin and of warm water is poured on to some chemically pure crystals of potassium permanganate. A marked reaction takes place. It should be added that some observers have reported slight explosions and bursts of flame during the use of the second method but Dr. Rilliet is incredulous as to such an occurrence.

The quantities of the reagents used must be calculated for the size of the room to be disinfected and details are given in the paper for doing this. To disinfect a hundred cubic metres would cost with autane 25 to 30 francs, with the permanganate method 10 francs.

It is difficult to compare the results of different observers as to bactericidal action as sufficient detail of the experiments is

rarely given. Dr. Rilliet himself found that organisms fully exposed were usually killed and spores also sometimes. There was, however, very little evidence of 'penetration,' cloth, etc., being generally sufficient to protect from the disinfecting gas.

MILES B. ARNOLD.

Intractable Ulcers.

DIEULAFOY. *La Presse Médicale,* June 10, 1908.

PROFESSOR DIEULAFOY gives an account of a man of thirty who for 2½ years had been subject to intractable ulcers of the left arm. The ulcers were of all sizes and shapes, clean-cut, with dry gangrenous bases. The limb was covered with keloid scars. The patient had consulted some fifteen doctors, the last of whom had opened up the axilla and stretched the brachial plexus. This proving ineffective the arm was actually amputated above the elbow, the patient freely consenting, although the limb had been perfectly useful and the condition was painless. Fresh lesions developed upon convalescence—this time on the right arm and the lower limbs. He was admitted in this state to the Hôtel Dieu, and here, for the first time, a diagnosis was established of factitious dermatitis. The very greatest tact is called for in handling these cases, as is well known, but the physician finally gained the confidence of the patient in this instance. The latter confessed that he was the victim of an irresistible impulse towards self-mutilation. He had used caustic potash to produce the lesions, and would even have been prepared to submit to further amputations in support of his deception.

G. H. LANCASHIRE.

The Uses of Chrysarobin in Psoriasis.

WALKER (N.). *Scottish Medical and Surgical Journal,* 1908.

THE writer discusses the use of chrysarobin in psoriasis. Some beautiful coloured plates—the best we have ever seen—show the changes in the skin produced by the treatment, and the proper stage to which the chrysarobin should be pushed, viz., erythema of the sites formerly occupied by the psoriasis patch. It is a common mistake to conclude that the disease is gone when the "white' stage only is reached. Dr. Walker uses for routine treatment an ointment of half a drachm of chrysarobin to the ounce of vaseline. The skin is bandaged in the usual manner after each inunction, and the face protected with a linen mask.

G. H. LANCASHIRE.

Treatment of Acne Rosacea by Yeast.

Von Zeissl (M.). *Münchener Medizinische Wochenschrift,* May, 1908.

The writer recommends the treatment of acne rosacea by means of yeast internally (he has used cerolin pills or Levurinose), and externally by painting strong solution of iron chloride on the lesions. The painting is done daily for a few days until a crust forms, which is allowed to separate and the painting recommenced. There can be no question of the astringent effects of such an application, but the treatment cannot compare in convenience and efficiency with the proper use of such drugs as sulphur, ichthyol, and resorcin.

G. H. Lancashire.

A Clinical Study of a case of Brain Tumour.

Graves (William W.). *Medical Record,* May 23, 1908.

The chief interest of this case lies in the completeness of its history. The patient was a married woman, aged 50, of good family and personal history. In 1903, nearly three years before coming under the writer's observation, she was troubled with sudden flushes of heat, during which she would be compelled to sit or lie for 15 or 20 minutes. In the summer of 1904, she complained of numbness in the right thumb and index finger, and, a few months later, came home one day feeling sick and dazed and aware of some difficulty in using the right arm. From this time a constant feeling of numbness developed in the right hand, and both hand and fingers became varyingly reddened and discoloured. In the summer of 1905, she was suddenly taken ill in the night: she was paralysed on the right side and speechless for 36 hours, but recovered in three days, though the right arm remained weak, and there was a resulting tendency to drag the foot in walking. The weakness in the right arm gradually increased, and in December, 1905, she had an attack of what was thought to be apoplexy. The right limbs were convulsed for about 15 minutes, and half an hour later, there was a second attack lasting from 35 to 40 minutes. For 24 hours following, she was absolutely speechless, though she was conscious and understood what was said to her. The right limbs were completely paralysed for 36 hours, and then recovered, though they remained still weaker than before. From the beginning of 1906, the patient became subject to speech defect: in the middle of a sentence, she would suddenly stop, saying "Oh! I can't talk," and then, after an interval varying from a few seconds to five minutes, would suddenly begin to talk again. About the same time, there developed a

frequently recurring momentary inability to use the right arm and hand, often independent of the speech defect. Finally, in September, 1906, she had a right-sided convulsion, involving the hand and face, and lasting 15 minutes; and in October, this attack was repeated, being preceded by half an hour of intense nervousness. She was for a time paraphasic, but always recognised her mistakes. There had never been either headache or vomiting. On examination, there was a varying paresis of the right upper extremity, with exaggerated reflexes and Babinski plantar reflex in the leg and foot. The optic discs were normal. There was an area of percussion dulness in the left superior fronto-parietal region, and on operation a cyst was found, the larger end of which overlay the ascending frontal convolution, the other part corresponding to the first and second frontal convolutions. During the first 24 hours after the operation, there was intense pain in the right upper extremity, especially in the finger tips and nails, and particularly in the thumb. By this time the previously existing hyperæmia had disappeared, and a large bleb had formed involving the radial and palmar surface and tip of the thumb. Within the next seven days, similar pain occurred in the tips of the index, middle, and ring fingers, again followed by the appearance of blebs. Unnatural sensations were complained of in the right hand and fingers for some months after the operation, but these gradually passed away. There was complete recovery of motor power.

JAS. W. RUSSELL.

Integrity of Stereognostic Function and of all forms of Sensation in a case with a Lesion of the Left Parietal Lobe.

GORDON (ALFRED). *Medical Record,* April 18, 1908.

THE patient, a man aged 58, shot himself in January, 1907, the bullet entering the skull near the right mastoid process. X-ray examination showed that it had lodged in the left parietal region, and on operation it was found about half an inch from the cortex in the parietal lobe. The patient had no recollection of the attempted suicide, or of any event occurring some months after the act, though preceding events were perfectly remembered. His mentality was somewhat impaired. There was no paralysis, or alteration of speech, and the reflexes were normal. He could hear and understand spoken words and could write. Several epileptiform attacks had occurred. The sense of touch, pain, temperature, and stereognosis were repeatedly examined both before and after the operation, which involved considerable destruction of the cortex of the parietal lobe, but at no time was any alteration in these functions observed.

JAS. W. RUSSELL.

Cerebellar Hæmorrhage.

COLLINS (JOSEPH). *Medical Record,* May 9, 1908.

THE case recorded is that of a man, 48 years of age, who denied syphilis, but had sometimes been rather immoderate in the use of alcohol and tobacco. In August, 1904, whilst walking, he was suddenly seized with violent ringing in the ears and dizziness, and fell to the ground. A twitching of the face was noticed at the time. He was taken home in a semi-conscious condition, and vomited for four hours; he was restless and incoherent, and the temperature was raised. For three weeks he was in a semi-conscious state, and then developed delusions that people wanted to kill him, etc. He complained of double vision and of a dull pain at the back of the head, which obliged him to keep it extended on the neck. Sugar was present in the urine for a period of three weeks. After three months, he was able to get up: he reeled like a drunken man. He was also uncontrollably emotional.

Soon afterwards he came under the writer's observation, and his condition has remained much the same up to the present time. The head is drawn backwards and towards the left, the face being tilted towards the right. When he attempts to speak, there is an explosion, then the next word is uttered in a whisper, or nearly so. There are attacks of uncontrollable laughter. He stands steadily, but the upper part of the body, and particularly the head, shows oscillations, though there is no sense of giddiness. On attempting to walk, "he has not taken two steps before he inclines abruptly to one side, pitches, reels, and seems about to fall, when he gathers himself and stops for a moment to get steadiness and confidence, and then goes on again." There is intention tremor of the extremities. Muscular power is normal. When he lies down and lifts his lower extremities from the table and holds them in mid-air they are motionless. Babinski has pointed out that this is characteristic of cerebellar disease, the healthy individual who attempts to perform this action always showing, after a few moments, a flickering in certain muscles of the thigh, and soon afterwards irregular movements of the legs. There is thus increase of static equilibrium, whilst kinæsthetic equilibrium, as shown by the gait, is diminished. There is inability to rapidly pronate and supinate the hand. When the eyes are moved into extreme positions nystagmus is observed, and there is also paresis of the left 3rd, 4th and 6th nerves. There is no disturbance of sensibility to touch, pain or temperature, and stereognosis and muscular sense are normal. The author's diagnosis is a hæmorrhage into the cerebellum, recovery from which condition is extremely rare.

JAS. W. RUSSELL.

Rubella.

CORBIN (H. E.) and GOODALL (E. W.). *Proc. Royal Soc. of Med., Epideml. Section*, January 24th, 1908.

THESE two papers and the discussion which followed them are useful as placing on record observations made on the unusually large number of cases of rubella which occurred during the spring and summer of 1907. The age incidence of the disease can hardly be considered as settled by the statistics quoted, as the number was not large enough, and the statistics of the two papers show a difference due to the difference in the class and age of the patients from whom the statistics are drawn. Prodromal symptoms are usually absent, but in a few cases they occur over twenty-four hours or more, and may be well-marked. At the London Fever Hospital it has been the practice for twenty years to nurse rubella and measles in the same ward with perfect success, but it must be remembered that the patients here are almost all young adults of the domestic servant and warehouseman classes, most of whom may be considered to be protected as regards measles. This experience also lends force to the general opinion that rubella is only infectious for a day before the eruption appears and for one day after, but of course it must also be considered in the light of the difference in the age incidence. The rash of rubella invades the face early, does not spare the circumoral area, and may often extend to the palms and soles. The posterior cervical and mastoid adenitis, so important as a diagnostic point, is often associated in adult patients with the complaint of a stiff neck. Desquamation varies greatly in character, and may be profuse. The incubation period is from ten to twenty-one days, but oftenest in the region of eighteen. In many cases no rise of temperature is noted. Koplik's spots, of course, never occur in rubella. The specificity of rubella was generally accepted, and that of "fourth disease" was just as generally denied.

FRANK E. TYLECOTE.

Relation between Sciatica and Disease of the Hip-Joint.

IRONSIDE BRUCE (W.). *Practitioner*, April, 1908.

THE writer states that in most of the cases of old-standing sciatica with typical symptoms in which he has taken radiographs of the hip, he was able to demonstrate changes in the joint, of the nature of arthritis deformans. Five cases are described and the skiagrams reproduced. Passive movements at the hip were free in four of the cases, though there was generally pain when the thigh was semi-flexed and rotated inwards. In all there was wasting of the gluteal muscles. In some there was pain on pressure over the front of the hip-joint as well as over the sciatic notch and popliteal space.

Slight and early changes in the joint may escape detection by radiography, especially if confined to the anterior or posterior aspects of the joint. The writer uses a constant "fixed position" by means of which uniformity of results is obtained and an accurate comparison can be made with a normal joint.

G. R. Mill.

Summer Diarrhœa.

Stawell and Others. *Intercolonial Med. Journ. of Australasia,* January, 1908.

Etiology. Stawell believes that progress is being made towards classification on an etiological basis and that the clinical types met with do conform in a broad sense with the bacteriological divisions of the disease. He recognises (1) fermental diarrhœa or enteritis, with many abnormal forms of organisms in the stools; (2) dysenteric diarrhœa or colitis, with the Shiga bacillus; and (3) an intermediate type, ileo-colitis, the commonest form of summer diarrhœa. In this form all are agreed that the dysentery bacillus is not present except rarely, and Stawell's view is that it is caused by many organisms of the typhoid and paratyphoid type. Some cases, however, must be regarded as due to auto-infection.

Symptomatology and Diagnosis. Bennie recounts briefly the symptoms and clinical course. The pronounced symptoms are essentially of toxic origin. Skin eruptions, erythematous, morbilliform or scarlatiniform, sometimes appear and have been noticed a day or two before the onset of the disease. The urine often contains albumin, indican in some cases, and sometimes there is hæmaturia. Reflex vesical spasm may be so severe as to necessitate use of the catheter. Diagnosis is based on the comparative suddenness of onset, incessant vomiting, frequent copious and watery stools, speedy prostration and rapid wasting. It has frequently been confounded with sunstroke, in which, however, the prostration is sudden, frequent purging absent, and the temperature rises more rapidly and usually higher.

Prevention. Wood emphasises the importance of cooling down the milk rapidly after scalding. The early morning bottle is the most risky and may be replaced by a feed of condensed milk or a milk food. Frequent cool bathing is advisable during hot weather, as also a reduction of the proportion of milk in the mixture.

Treatment. Cole gives pure water for 24 hors, then barley or rice water. If there is vomiting 1 to 2 grains of calomel are given in $^1/_{10}$ grain doses every half-hour, if no vomiting a large teaspoonful of castor oil. Irrigation of the bowel is done immediately and thoroughly, and repeated in 12 to 24 hours.

Early gastric lavage is recommended, and seldom requires repetition. Laxative treatment should be continued for two or three days if the temperature is raised, by 8 to 10 minim doses of castor oil in emulsion every four hours. If tenesmus is present opium may be added. After 48 hours he adds mutton or chicken tea, and 24 hours later whey and meat-juice. Milk is still withheld, a converted starch food or biscuit with water being next given. The return to milk must be very gradual, and he continues to give the castor oil emulsion during this period. As regards drugs, bismuth is often productive of much harm, particularly when the temperature is high and the motions foul. Antiseptics are of little use except bichloride of mercury. Alcohol is an irritant. Open air is insisted on day and night as far as possible. Frequent cool spongings and methylated spirit compresses to the abdomen lower temperature and promote comfort.

G. R. Mill.

Duodenal Ulcer.

Mitchell (A. B.). *Dublin Journal of Med. Science*, 1908, p. 429.

This interesting paper gives an account of the diagnosis and treatment of duodenal ulcer with 27 illustrative cases. The characteristic symptoms of the disease in the writer's experience are:—

1. Pain of a special type.
2. A feeling of fulness and discomfort after food, with eructations of gas, and generally with some hyperacidity.
3. Local tenderness just above and to the right of the umbilicus.
4. Hæmatemesis and melæna.
5. Some degree of dilatation of the stomach.

The *pain* is very typical. Usually described as burning and gnawing, it occasionally assumes the form of violent spasms, closely simulating gall-stone colic. It usually comes on two or three hours after food, and sometimes awakens the patient from sleep. Its essential characteristic is that it is promptly *relieved* by taking food, and subjects of duodenal ulcer generally carry food about with them, or have it by their bedside, so as to be ready for the pain. It is consequently known as *hunger pain*. The explanation of the relief caused by food is that the entrance of the latter into the stomach stops, for a time, the outflow of the acid digested food, the passage of which over the ulcer causes the pain; or it has been suggested that the additional food dilutes the acid contents of the stomach, in the same way that a hot drink, which often relieves the pain, does. The effect of food on a duodenal ulcer then is the opposite to

that in a gastric ulcer, and this fact has been used by some clinicians as a means of diagnosing the situation of an ulcer.

Local tenderness is not always constant or well defined, but when present in addition to the characteristic pain is a valuable sign. Its absence is not of much importance in forming a diagnosis.

Melæna when present in the form of tarry motions, associated with indigestion, makes the diagnosis of duodenal ulcer almost certain.

Dilatation of the stomach to a more or less degree is present in most cases from an *early* stage of the ulceration, when it may be due to a spasm of the pylorus trying to keep the acid contents of the stomach from passing into the duodenum. Later it is mechanical from cicatricial contraction or adhesions.

Jaundice is an occasional symptom, which may make the diagnosis from gallstones impossible.

Position of the ulcer is most frequently in the first part of the duodenum within one inch of the pylorus and on the anterior surface.

Treatment. Whilst duodenal ulcers may heal, such cases very frequently relapse, and then surgery must be practised. Permanent relief generally results after a successful operation for gastro-jeujunostomy. Mitchell here records brief notes of seventeen such operations, all of which recovered, and of nine cases in all of which also recovery took place after operation for perforation of the ulcer.

E. M. Brockbank.

Surgery.

Acute Dilation of the Stomach—Gastromesenteric Ileus.

BLOODGOOD (J. C.). *Annals of Surg.*, 1907, vol. xlvi, p. 736.

THE writer first describes a case of primary acute gastric dilatation occurring during convalescence from a severe attack of rheumatic fever. The symptoms began directly after the first solid meal, in a patient greatly emaciated and weakened by a long illness. There were marked epigastric distension and peristalis with flatness of the lower abdomen, vomiting of large quantities of gastric and duodenal contents, and absolute constipation. There was no fever. The leococytes were 40,000. The duration of symptoms was $3\frac{1}{2}$ days. At the operation great dilatation of the stomach and duodenum was found reaching up to the mesentery; the small intestines were collapsed. Jejunostomy was performed, but death resulted 2 hours later. At the autopsy no evidence of adhesions and no gross anatomical changes at the duodeno-jejunal junction were found to account for the dilatation.

Records of two other cases, one acute and post-operative, and one chronic are given, where similar symptoms and similar findings occurred. Reference is also made to two cases of post-operative gastric dilatation, in one of which recovery followed after the use of the stomach tube.

Some cases of high intestinal obstruction are quoted to contrast the diagnosis of this condition from acute gastric dilatation. The chief distinguishing features are, in the former, initial pain, accompanied perhaps by peritoneal shock which may later disappear somewhat and vomiting without marked distension; in the latter the initial pain is absent, there is epigastric distension and distress, collapse is gradual and progressive, the distension is relieved by the passage of the stomach tube.

A review of the literature shews that the mortality of acute gastric dilatation is over 70%. Recovery has only followed the early and repeated use of the stomach tube.

The writer suggests that the operation of duodeno-jejunostomy is theoretically the operation of choice in these cases.

P. R. COOPER.

Acute Dilation of the Stomach and Arterio-mesenteric Ileus.

Laffer (W. B.). *Annals of Surg.*, 1908, vol. xlvii, pp. 390 and 532.

This paper consists of a very complete analytical review of 217 cases, including 4 of the writer's, the rest being collected from literature. Of the writer's own cases one occurred after parturition. The second supervened upon septicæmia. The third was mild, post-operative, and recovered under gastric lavage. The fourth was associated with diffuse myelitis.

The analysis of cases shews that acute dilatation is most frequent between the ages of 20 and 30, although no age is exempt. Both sexes are about equally affected.

Ætiology.

38·2% followed operations, and of these 69% were laparotomies. It occurred rather oftener after chloroform than after either anæthesia (12 : 8). It started the first day after operation in less than half the cases, was most frequent on the 3rd or 4th day, and befell as late as 2 weeks after operation.

In about 8% trauma was thought to be the cause, but in only a third of these cases was the trauma applied directly to the abdomen.

40 cases occurred while the patient was suffering from some more or less serious disease. Pneumonia* led the list with 6 instances, then came appendicitis with 4, cancer of œsophagus 3, abscess of jaw 3, localized tuberculosis 1. In 11 cases spinal curvature was present, in 5 of these the application of a plaster jacket was thought to be the cause of the dilatation.

5 cases occurred in patients convalescing from typhoid, 2 followed acute rheumatism, and 1 scarlet fever.

Errors of diet seemed to be the cause in 20 cases.

In 4 cases drinking a large amount of fluid had been blamed, but as thirst is an early symptom it may be the effect rather than the cause.

Drugs have been blamed by several, *e.g.*, sodium salicylate and morphine, veronal, &c.

Previous stomach trouble had been present in more than 50% when enquiry was made.

2 cases complicated confinement.

The most important *symptoms* are nausea and vomiting, severe thirst, pain, collapse, abdominal distension, stomach splashing with constipation, and scanty urine. Occasional

* The present abstractor has had one case occurring about the time of onset of influenzal pneumonia, in a patient with early tubes.

symptoms may be diarrhœa, hiccough, tetany or convulsions, dyspnœa, cyanosis. The *temperature*, unless influenced by an associated infection is usually normal or subnormal.

The *pulse* may at first be normal, but usually soon becomes quick and thready as collapse comes on.

The *passage of flatus* is frequent and is helpful in distinguishing the condition from intestinal obstruction.

Diagnosis:—*Peritonitis* is most frequently mistaken for acute gastric dilatation, the chief differentiating features are absence of marked tenderness and rigidity, normal or subnormal temperature, presence of succussion splash and frequent vomiting of large amount of characteristic greenish fluid, and by the relief to distension from the passage of the stomach tube.

For a *Pancreatic cyst* it has been several times mistaken, but the passage of a stomach tube should serve to distinguish them.

From *Uræmia* again it should be excluded by use of the stomach tube.

From *intestinal obstruction* it is sometimes very difficult to differentiate the condition, especially in high obstruction; the passage of flatus, and the relief afforded by the stomach tube will give best clue.

Prognosis:—The mortality is 63·5%. It is probable, however, that mild cases are overlooked and recover, whilst the severe ones are apt to attract attention.

Treatment:—*Preventive.* A careful examination of the stomach for dilatation should be made before all operations or anæsthetics. Large meals should be avoided whilst the patient is in bed. Water should first be given by enema. The dorsal position should not be maintained exclusively. Handling of the stomach and chilling during operation should be minimised.

When slight discomfort or belching, nausea and uneasiness occur gastric lavage should be promptly used.

Active:—All ingesta by the mouth should be stopped. The stomach pump should be passed immediately, taking care that it reaches to the bottom of the dilated organ. It should be used frequently. The patient must avoid the dorsal position, and lie on the abdomen with frequent resorts to the knee-chest position.

Enemata of salt solution (6%) under pressure of 1½ feet above the rectum, with the pelvis elevated, should be freely given. A saline transfusion should also be employed. Of *Drugs*, atropine, morphine, strychnine and eserine have been recommended hypodermically, also stimulants and restoratives.

Operative treatment has not proved very satisfactory, but gastro-jejunostomy or duodeno-jejunostomy may be resorted to in desperate cases. Gastrotomy has invariably proved fatal.

P. R. Cooper.

Is Death in High Intestinal Obstruction due to the Absorption of Bile.

MAURY (J. W. D.). *Annals of Surg.*, 1907, vol. xlvi, p. 556.

THE rapid fatality of obstruction in the duodenum or upper portion of the jejunum has been variously ascribed to shock, lack of absorption of water, toxic absorption resulting from the decomposition of intestinal and stomach contents, &c. In the present communication cogent reasons are given for doubting these alleged causes, and strong evidence is adduced for the view that the main death-dealing factor is the absorption of bile. A series of experiments was made on animals in which gastro-enterostomy was performed by a closed method. The stoma was made by the "twine triangular stitch,"—a simple substitute for the McGraw ligature,—which cuts out a rounded opening in 70 to 100 hours. It was found that complete obstruction was tolerated during the cutting out of the stitch if placed oral to the bile-duct, whilst it was invariably fatal before the stoma was established if the obstruction was situated aboral to the duct. The fatal issue could, however, be prevented by providing drainage of hepatic and pancreatic secretions into the intestine. This shewed that shock was not the cause of death. That the fatal outcome was not due to pyloroplasm was also shewn by inserting rubber tubes to connect the duodenal loop with the stomach, this did not prevent death. It was also shewn that the presence or absence of food in the stomach and duodenum had nothing to do with the fatal result; the "lethal line" in either case was always approximately 35 c.m. from the pylorus. Drainage of the stomach into the intestines, however, sufficed to save the animal's life, no matter where the duodenum was blocked. Drainage of the duodenal loop, *i.e.*, by entero-anastomosis, was equally effectual in preventing death. Experiments are still proceeding to test the effect of transplanting the point of bile entrance beyond the 35 c.m. line, and of excluding bile from the duodenal pouch, and already several animals have survived beyond the time which would have been possible had the bile been passing down its normal course.

The characteristic form of death in duodeno-jejunal obstruction is a "pseudo-tetanus," not unlike that following parathyroidectomy.

The explanation of the condition offered by the writer is that (1) the toxic elements of the bile are normally rendered harmless by dilution and colloidal suspension in the secretions of the small intestine; (2) as the length of the small intestine from bile duct to the site of obstruction decreases, so the diluting secretions decrease and the toxicity rises proportionally; (3) absorption of this highly toxic bile, which has no other outlet, produces the symptoms of pseudo-tetanus ending in death.

The writer finally suggests that if further experiments prove

that absorption of bile is the cause of death, it may certainly be possible to lower the operative mortality in these hitherto most unfavourable cases of intestinal obstruction.

P. R. Cooper.

The Parathyroid Glandules. Their Blood Supply, and their Preservation in Operation upon the Thyroid Gland.

Halsted (W. S.) and Evans (H. M.). *Annals. of Surg.*, 1907, vol. xlvi, p. 489.

The usual situation of the parathyroids in man is at the level of the junction of the upper and middle thirds of the lateral lobe of the thyroid gland, on or very near the posterior border. Each organ consists of two glandules having each its own special artery, which may be called the superior and inferior parathyroid arteries, right and left. These arteries are comparatively large and afford serviceable guides to the glandules when the latter are enveloped in fat. The best way of avoiding removal of the parathyroids in performing thyroidectomy is to do Mayo's "subcapsular" operation. The writers also recommend the method of "ultra-ligation," *i.e.*, ligation beyond the origin of the parathyroid arteries, in operating for exophthalmic goître. They also suggest that the application of cold to the neck, by delaying absorption from the wound, may largely prevent toxæmia in these cases.

P. R. Cooper.

The Parathyroid Glands.

Geis (N. P.). *Annals of Surg.*, 1908, vol. xlvii, p. 523.

According to this writer:—

1. The parathyroid glands are essential organs.
2. Each gland has a separate and distinct capsule.
3. The average number to a person is about three.
4. They are generally located on the posterior surface of the capsule of the thyroid.
5. Each parathyroid gland has a special parathyroid artery that supplies it and it alone.
6. Destruction of the ? parathyroids causes death from tetany.
7. Cutting off of the blood supply causes the same fatal result.
8. The loss of their blood supply is the more frequent cause of death.
9. To save them and preserve their blood supply only the arteries that enter the thyroid gland should be cut.
10. The safest method of operating is from above downwards.

P. R. Cooper.

Tetany Parathyreopriva.

Pool (E. H.). *Annals of Surg.*, 1907, vol. xlvi, p. 507. This is a report of a case with a brief discussion of the disease and of the parathyroid glands.

The case quoted is that of a patient who had never presented any hysterical or other nervous manifestations prior to the onset of a typical tetany four days after an operation for goître. Both Chvostek's and Trousseau's signs were present. The explanation of the case appears to be that at the first operation two parathyroids were removed with the left lobe of the thyroid. The symptoms did not, however, develop until after the second operation, where probably one of the remaining parathyroids was damaged by the clamp. Had both parathyroids been destroyed fatal tetany would have resulted, but such was not the case. Although improvement and apparent cure resulted during the administration of Beebe's nucleo-proteid and after the subcutaneous implantation of human parathyroids, the fact cannot be overlooked that the improvement may have been due to a compensatory hypertrophy of the remaining (uninjured) parathyroid glandule. At any rate, considering the present uncertainty of all methods of treatment, the importance of prophylaxis cannot be over-rated. To this end in all operations upon the thyroid the greatest care must be taken to preserve intact the parathyroids and their blood-vessels. This is best achieved by carrying out the dissection of the thyroid gland as as close as possible to the true capsule of the organ, and carefully stripping off and preserving small bits of independent tissue; moreover, in ligaturing the inferior thyroid artery care must be taken to avoid including in the ligature-clamp the inferior parathyroid artery which lies in close relation to this vessel. P. R. Cooper.

The Operative Treatment of Acute Abscess of the Lung.

Tilton (B. T.). *Annals of Surg.*, 1907, vol. xlvii, p. 405. After referring briefly to the history of the operation, and to the difficulties of differentiating, prior to operation, between an intra-pulmonary abscess and an inter-lobular empyema, or a sacculated empyema which has broken secondarily into the lung or bronchus, the writer distinguishes, from the point of view of operative treatment, three chief varieties of intra-pulmonary suppuration:—(1) acute abscess, simple or gangrenous; (2) chronic abscess; (3) bronchiectasis. Tuberculosis and actinomycosis are placed in a different category. A synopsis of 20 cases of abscess of the lung is given shewing a mortality of 50 per cent, after operation: This mortality seems high, but some of the cases included were of 4 or 5 months duration, and some were gangrenous. All of the gangrenous cases died, and

2 cases of multiple abscess died. On the other hand, with one exception, all the cases of simple abscess of less than 8 weeks duration and with non-gangrenous contents recovered.

In 15 out of the 20 cases the abscess followed pneumonia. 17 of the 20 patients were males and 3 females. It is pointed out that abscesses following influenza and pneumonia are frequently multiple and run a more chronic course, and are in general not suitable for operative treatment. Similarly, embolic abscesses are not usually favourable.

The writer concludes "Our hope of good results seems to lie in the simple abscesses which are discovered early, before they have become extensive, multiple or complicated by empyema, and before the patient has grown septic. Cases of lobar pneumonia which run an irregular course suggesting secondary empyema and in which pus is not obtained by trial puncture of the pleural cavity, should be regarded with suspicion. They should not be permitted to drag along in the medical wards until the favourable time for operating has passed. It is far safer to explore such cases by resection of one or more ribs, palpation and inspection of the pleura, search for an adherent area, and trial punctures of the lung through the adherent portion. If pus is present within the lung it should be found in this way at the time, or may be evacuated later spontaneously through the wound (as happened in one of the cases which subsequently recovered). If pus is not present, no harm has been done by the simple operative procedure at a time when the patient's general condition is good." The writer does not recommend irrigation of the abscess cavity, believing that this contributed to the fatal result in one instance.

P. R. Cooper.

Treatment of Intractable Hay Fever and Paroxysmal Coryza by Resection of the Nasal Nerve.

Yonge (E. S.). *Lancet*, 1908, vol. clxxiv, p. 1688.

The operation performed was as follows:—

Operation. Under $CHCl_3$ an incision was made at the inner edge of the orbit, commencing just above the inner canthus and extending upwards and slightly outwards for about $\frac{3}{4}$in. The cellular tissue having been cleared from the inner and upper wall of the orbit by means of a blunt dissector, and the nerve located at the anterior ethmoid foramen, the latter was separated from the artery and divided close to the foramen, about $\frac{1}{4}$in. of nerve being removed. Horse-hair sutures were inserted and the wound was dressed with gauze and collodion. The stitches were removed on the 4th day. Resection of the nerve on the opposite side was done 4 weeks later.

(N.B.—In subsequent operations both sides were done at once.)

The effect of the operation has so far been quite satisfactory, complete cessation of paroxysmal sneezing and coryzal attacks and asthma having resulted, and the patient having gained ½lb. in weight in 2 months.

P. R. Cooper.

Strumectomy in Basedow's Disease—Remote Results.

Garre. *La Presse Médicale,* 1908, No. 17.

Surgical interference is indicated in all cases which have derived no benefit or insufficient benefit from medical treatment. Medical treatment should not be persisted in too long where the course is progressive. Operation is generally contra-indicated in cases complicated by severe toxic myocarditis. In one case of this sort radiotherapy yielded very satisfactory results, but in two other cases of medium severity, in which operation was declined, it was tried without result.

The writer is in the habit of performing hemistrumectomy, removing always the more enlarged lobe. He reserves vascular ligature for cases of soft vascular goitre when the condition is not of long standing, or cases in which hemiresection has not given satisfactory results. He has never employed Poncet's operation of exothyropexy.

He has operated on 35 cases (5 men, 30 women). Hemistrumectomy was performed 30 times, vascular ligature 8 times, resection of the sympathetic twice, completed by enucleation of intraglandular nodules. In all the cases the thyroid was extraordinarily vascular, and the vessels very friable. Almost all were done under ether, a few under local anæsthesia. He does not think that the substitution of local for general anæsthesia will avert fatal accidents.

Immediate results. Excepting 4 cases there was invariably a reduction of pulse frequency, this usually falling to normal from the fourth to the fifth day. With two exceptions all declared themselves better and calmer after the first few days. Exophthalmos was least influenced. In no case was any aggravation of the patient's condition observed.

Remote results. 20 cases were investigated 5 or more years after operation. Exophthalmos had disappeared in one third; in nearly half only a trace remained; in one-fourth it persisted in the same degree as before. Tachycardia persisted in 4 cases only; in more than two-thirds the pulse remained below 92; in one-third it had not fallen below 100. Nervous troubles persisted in two-thirds. Body weight and general state were excellent in 50%.

Absolute and complete recovery is rarely seen. The writer does not estimate more than 16% of actual cures, but besides these a large number are greatly improved and some have been

able to resume full work and lead a normal life. The total of recovered and improved stands at 85%, failures, including one death, number 15%. Medical treatment yields a mortality of 12%, reaching 23% in grave cases. A surgical success of 85% with mortality of 3% is therefore worthy of consideration. 31 consecutive operations were performed without a death, the next died on the table under ether, the autopsy revealing hypertrophy of the thymus.

G. R. Mill.

On the Anatomy of the Long Bones Relative to certain Fractures.

Thompson (R.). *Lancet*, April 18th and 25th, 1908.

One of the main points to which Mr. R. Thompson drew attention in his Hunterian Lectures was the fact that the line of fracture in certain given situations is due partly to the direction of the force causing the fracture and partly to the arrangement and direction of the lamellæ of the cancellous bone in the region of the fracture. Another point of importance was the function ascribed to the ligamentum teres of the hip joint. Mr. Thompson thinks that the very general idea that the ligamentum teres is practically useless as a ligament is erroneous and he believes it tends to prevent the anterior part of the neck of the femur from coming into dangerous contact with the anterior margin of the acetabulum, such contanct, if violent, being capable of causing intra-capsular fracture of the neck. In drawing attention to the prominent lower margin of the glenoid fossa of the scapula Mr. Thompson suggested that it might probably have a causative association with fracture of the surgical neck of the humerus, inasmuch as the surgical neck is brought into direct contact with the prominent margin in adduction of the arm. Mr. Thompson's explanation of the rarity of the fracture in the outer third of the clavicle and its relatively common occurrence in the middle third is based upon the fact that pressure lamellæ are better developed in the inner two-thirds than the outer third of the bone from which he infers that the pressure transmitted from the arm to the clavicle does not pass through the acrimio-clavicular joint but through the trapezoid ligament.

Arthur Robinson.

Pathology.

Upon the Fate of the Islands of Langerhans after Ligature of the Pancreatic Duct.

TIBERTI (N.). *Lo Sperimentale.* Anno lxii. Fasc. i.—ii.

BY means of a series of experiments on rabbits, Prof. Tiberti found that for fifteen days after ligature of the excretory channels the islands of Langerhans remained perfectly normal although the glandular tissue proper was considerably altered. At later periods after the operation of ligature masses of cells were found, some of which could be identified as remnants of the islands whilst others were so markedly different from the islands that it was impossible to decide if they were new formation or profoundly modified islands. For a period of four months the animals remained healthy and had no sugar in their urine although the secretory substance of the pancreas was practically destroyed. After the fourth month sugar appeared in the urine and emaciation set in.

ARTHUR ROBINSON.

On the Resistance of Bacillus Paratificus B. (Schottmüller).

RONDONI (P.). *Lo Sperimentale.* Anno lxii. Fasc. i.—ii.

Dr. RONDONI notes that bacillus paratificus B is generally stated to have greater resisting powers than the typhoid bacillus possesses. With the object of estimating this power he made a series of experiments which proved that bacillus paratificus B is able to resist exposure to a temperature of 60—62° for a period of 30 hours but in normal saline solution is destroyed if the solution was boiled for about one minute. The bacillus is particularly susceptible to light and was killed by an exposure of four hours to ordinary daylight. It was also killed by exposure to 10% solution of sodium chloride for six days, but the bacillus was alive after exposure to weaker solutions of salt after a period of 28 days. It was killed in less than a minute by 1 per cent. solutions of mercuric chloride but resisted 5 per cent. solutions of phenic acid for variable periods. In mixtures containing the paratyphoid bacillus and bacterium coli the former disappeared in about three days, but the bacillus has much greater resisting power to vino rosso than other pathogenic organisms have.

ARTHUR ROBINSON.

On the Effects of Total and Partial Extirpation of the Pancreas in Dogs.

TIBERTI (N.) and FRANCHETTI (A.). *Lo Sperimentale.* Anno lxii. Fasc. i.—ii.

THE conclusions which the authors derive from their series of experiments are (1) that, in spite of all care and skill, complications, especially sepsis, are very apt to follow operations on the pancreas; (2) glycosuria may be entirely absent after the removal of the gland or it may be slight or great, varying with the amount of pancreas removed, complete removal being usually followed by intense glycosuria which rapidly proves fatal; (3) that in glycosuria following removal of the pancreas treatment with nucleoproteids and pancreatic extracts has no beneficial effects; (4) that the question whether the glycosuria is due to removal of the gland or to the injury of nervous structures cannot yet be definitely answered.

ARTHUR ROBINSON.

On Changes in the Parathyroids of Dogs suffering from various Morbid Conditions Experimentally Produced.

TRAINA (R.). *Lo Sperimentale.* Anno lxii. Fasc. i.—ii.

THE result of a series of experiments which Traina made with the object of discovering if any marked changes in the parathyroids were associated with artificially produced diphtheria, tetanus, uremia and jaundice, or followed the removal of the ovaries, testicles, pancreas and inoculation with staphylococci or streptococci gave, on the whole, negative results, for the few changes noted were of comparativly little importance.

ARTHUR ROBINSON.

The Significance of Tubercle Bacilli in the Fæces.

ROSENBERGER (R. C.). *Amer. Journ. of Med. Science,* 1907, p. 830.

IN the stools of 672 cases collected from the wards of the Philadelphia General Hospital, the tubercle bacillus was found in 120 cases. In 60 cases diagnosed as tuberculosis, the organism was demonstrable in all. Rosenberger's technique is as follows: a small quantity from any part of the stool is spread on a slide and dried. Carbol-fuchsin is applied for fifteen minutes in the cold, the excess drained off, and Pappenheim's solution poured on the preparation. This is allowed to act for two or three minutes, washed with water, and then dried.

Rosenberger inoculated rabbits and guinea pigs subcutaneously with a culture of attenuated human tubercle bacilli. Upon the fourth day he detected tubercle bacilli in their fæces.

The rather sweeping assertion is made that no acid-fast bacillus other than the tubercle bacillus was found in the

fæces. He considers that the presence of the tubercle bacillus in the fæces means that active tuberculosis exists somewhere in the body. "In acute miliary tuberculosis, the bacillus," he says, "is always present in the fæces."

The fæces should be studied for tubercle bacilli as a part of the routine examination, but when found, it must not be assumed that the presence of tubercle bacilli in the fæces indicates intestinal ulceration always.

It will be interesting to learn whether other workers agree with the results. WALKER HALL.

Ammonia in Diabetes.

GOODALL (H. W.) and JOSLIN (E. P.). *Boston Med. and Surg. Journ.*, 1908, p. 646.

THE excretion of ammonia in diabetes forms a good index of acid production in the body, but it cannot be claimed that it is the best, or only good, test of the severity of a case of diabetes, and it must be remembered that it is not permissible to use it as a criterion in the last days of life.

The authors have carried out some very extensive investigations upon the ammonia output, and they consider that—with due regard to the intake of nitrogenous food—quantities of ammonia reaching 5 gm. in 24 hours indicate an extremely severe form of diabetes, which usually proves fatal within a year. Patients under 40 years of age tolerate an acidosis equal to 4—5 gm. ammonia output far better than those above 50 years tolerate an acidosis of 2·5—4 gm. ammonia output. An acidosis in an individual above 50 years of age is of very serious prognostic import. In a severe case of diabetes, a lowering of 30 gm. carbohydrate intake produced little effect upon the acidosis. WALKER HALL.

The Origin of Urinary Casts.

SMITH (R. M.). *Boston Med. and Surg. Journ.*, 1908, p. 696.

INJECTIONS of uranium nitrate and other irritants produced an albuminuria and cylinduria in rabbits. Casts are more common in the urine when the renal lesion is primarily a necrosis of the tubular epithelium. Finely granular casts are the first to appear, hyaline casts following much later. The casts arise from the degeneration and necrosis of the cells of the tubular epithelium of the kidney. Entire necrotic cells may desquamate,at first remain distinct, then become massed together, and finally form into a definite plug, taking the shape of the tubule in which it is formed. The same process takes place with cell fragments and granular material derived from disintegrated cells. The casts are all granular at first, becoming hyaline as they pass down the tubule in the urinary stream.

WALKER HALL.

Therapeutics.

Epidemiology and Bacteriology in the Scientific Struggle with Typhoid Fever.

TANON (M. L.). *La Presse Médicale*, June 24, 1908, p. 401.

THE writer believes that all the microscopical and laboratory work done nowadays in the attempt to get rid of enteric fever is only an application in a new way of knowledge which, from the point of view of the epidemiologist, has been possessed for over a hundred years. That this new work is useful in dealing with a few known cases is agreed, but it is leading to the neglect of secondary causes of great importance.

Overcrowding, overwork, rise of temperature have been shown from occurrences in the French army to be capable of precipitating an epidemic of enteric fever, even when in some cases one is dealing with a body of men isolated for some weeks in good sanitary conditions and amongst whom no case of fever has been present.

MILES B. ARNOLD.

Urticaria following the Second Administration of Diphtheria Antitoxin.

BLAIN (ALEXANDER W.). *Medical Record*, June 6, 1908, p. 940.

THIS is an account of seven cases in which the giving of a second dose of serum was followed by more than the usual reaction, and the following conclusions are drawn :—

(1) The second immunising dose of antitoxin should be given with caution, especially to individuals of the blond type, regardless of how long previous the first was administered.

(2) In persons to whom an immunising dose of antitoxin has been given and who later contract diphtheria an attempt should be made to regulate the dosage in comparison with the severity of the infection.

(3) A positive clinical diagnosis of diphtheria is often utterly impossible, regardless of the amount of experience possessed by the clinician, and consequently all suspicious cases should be treated as diphtheria and by antitoxin, until proved otherwise, since the possibility of trouble caused by the antitoxin is not to be compared with that of the danger from diphtheria.

MILES B. ARNOLD.

The Treatment of Elephantiasis.

CASTELLANI (A.). *Riv. crit. di Clin. med.,* Florence, 1908, ix., p. 321.

THE author has had the opportunity of treating 9 cases of elephantiasis in Ceylon. He found that the subcutaneous or intravenous injection of antiseptics was useless. He then employed the subcutaneous injection of 2·4 grams of thiosineamine (or 2–4 c.c. of fibrolysin), either into the affected tissues, or, and with equal success, into neighbouring unaffected tissue, together with the application of pressure by means of flannel bandages. Bandages of elastic indiarubber, he notes, gave excellent results, but were not well borne by the patients. The bandaged limb should be kept elevated. The treatment is applied daily for a month; after a week's intermission it is employed for another month, and so on until from 3 to 6 months have been passed. Finally, elliptical pieces of the redundant skin may be removed, the wound being readily closed by means of sutures. Castellani observed great improvement in 70 per cent. of the cases thus treated; treatment with elastic bandages alone has not proved successful in his hands.

A. J. JEX-BLAKE.

Recent Progress in Treatment with Digitalis.

KOTTMANN (K.). *Berliner Klinik,* 1908, Hft. 237.

AFTER discussing the way in which various preparations of digitalis affect the heart's action, the author draws the general conclusion that they exert their specific action by increasing the output of the heart—the volume of blood it pumps into the circulation per unit of time. They also act better when compensation is failing than when it has failed; in the latter case, venesection combined with the exhibition of digitalis will often be of great service.

With all preparations of digitalis the great difficulty has been to get them pure, or uniform in composition or concentration. The galenical preparations vary very widely in strength, inevitably. Golaz, a pharmacist of Vevey, was practically the first to introduce a standardized product; this was a dialysate from the fresh leaves, and was standardized physiologically by observing its action on the frog's and rabbit's heart. Other analogous digitalis preparations have been made by Bürger, Kobert, Caesar and Loretz, and others: it may be said in general that these dialysates are more trustworthy than the infusion or tincture, but still leave a good deal to be desired, perhaps because the hearts of frogs and rabbits do not react to digitalis exactly in the same way as the human heart does. The next great step was the preparation of chemically pure

digitalis extracts, though chemists are not yet in agreement as to what substances may fairly be regarded as pure digitalis products. Thus, according to Schmiedeberg, the Digitalins known as Merck's, Homolle's, or Quevenne's, are mainly amorphous digitalin, while Nativelle's digitalin also contains digitoxin. All these preparations appeared to be liable to slow absorption, so that symptoms of digitalis poisoning might appear as a result of their continued exhibition. In 1904, Cloetta introduced his Digalen, a more soluble form of digitoxin (1·0 c.c.=0·0003 gram digitoxin). More recently, Boehringer has placed his Strophanthin on the market, a pure glucoside prepared from Strophanthus hispidus. Both digalen and strophanthin appear to be trustworthy and uniform preparations, and can be given by the mouth, under the skin, or intravenously. Digalen shews remarkably little cumulative action; both digalen and strophanthin act very promptly.

Given by the mouth, digitalis preparations are best taken on an empty stomach, as in this way they will soonest leave it and be least likely to cause gastric upset. Many of the preparations, particularly those containing digitoxin, lead to suppuration if given subcutaneously, even though the most careful antiseptic precautions be taken. The intravenous administration, first practised by Kottmann in 1903, has been mainly confined to digalen and to Boehringer's strophanthin, and gives excellent results in cases of heart-failure; in patients who are extremely ill, however, or moribund, the dose must be small—say 1·0 c.c. of digalen, or 0·3 c.c. of strophanthin—in place of the 1·0–2·0 c.c. of digalen repeated every 12 hours or the 1·0 c.c. of strophanthin repeated in 24 hours that may be regarded as the normal dosage. At present it is not possible to say what sort of cardiac case will respond best to digalen and what sort to strophanthin; both deserve an extended trial.

A. J. Jex-Blake.

Exophthalmic Goitre and the Milk of Thyroidectomized Goats.

Cavazzani (A.). *Riv. crit. di Clin. med.*, Florence, 1908, ix., p. 241.

The author gives details of the case of a woman of 32 who developed exophthalmic goitre in an acute and severe form, with great emaciation and crises of diarrhœa and vomiting. Rest, careful feeding, arsenic, and galvanism applied to the neck, produced a moderate improvement for a time, but a severe relapse soon followed. Then rodagen (extract of the milk of thyroidectomized goats) was tried, but without any success. So thyroidectomy was performed on a goat in milk, and the milk of this animal was given to the patient. Steady improvement resulted, and the patient was nearly cured in 6 months.

when the goat met with an accident and died. Möbius' antithyroid serum was therefore given to the patient, but without producing any improvement. A second goat was therefore thyroidectomized, and an apparently complete cure followed the administration of its milk to the patient; her weight went up from 41 kg. to 65 kg., and all the symptoms of exophthalmic goitre disappeared. Cavazzani remarks that thyroidectomy is easily performed on the goat, and that the goat stands the operation well; he thinks that the rodagen and antithyroid serum failed to do good to the patient probably because they were not absolutely fresh.

A. J. Jex-Blake.

An Analysis of Psychotherapeutic Methods.

Dercum (F. X.). *Therapeutic Gazette*, May 15, 1908.

The writer divides the psychic methods of treatment into general and special. The former consist essentially of mental rest and mental exercise, combined in suitable cases with physical exercises. The special methods include (1) suggestion in the waking state, (2) suggestion under hypnosis, (4) Breuer and Freud's method of psycho-analysis or "catharsis," and (4) appeal to the religious feeling and the superstition of the patient.

The first of these special methods amounts simply to the reassurance of the patient, and the removal of those fears and anxieties with regard to his recovery which do much to retard it. Against the second, or treatment by suggestion under hypnotism, Dr. Dercum enters a strong protest. He considers its use rarely justified. Hypnotism is, he maintains, merely an artificially induced hysteria; it is therefore pathological, and cannot be used without damage to the patient. Its effects are, moreover, transitory, and permanent benefit is rarely obtained. Of the fourth method, nothing need be said; but the method of Breuer, modified by Freud, receives detailed examination. It is based on the belief that the individual symptoms of hysteria will disappear if the memory of the event which mainly caused their development can be fully aroused, together with the accompanying emotion, and if the patient can be induced to give the fullest possible description of this event and verbal expression to the emotion. For this purpose, a long succession of interviews under conditions favourable to suggestion, but not accompanied by hypnosis, are required, and Freud himself admits that from six months to three years are occupied in the treatment, each interview lasting an hour or more. At the bottom of the theory on which the method is based, lies, however, the belief that the symptoms always have an ultimate sexual source, and the necessity for a series of questionings on such matters will at

once condemn the method to English-speaking practitioners. Indeed, the opinion is expresed that the sexual confessions eventually obtained from some of the patients are themselves the result of suggestion.

JAS. W. RUSSELL.

The Internal Use of the Oil of Turpentine.

SMITH (EUSTACE). *Brit. Med. Journ.*, May 13, 1908.

AMONGST old remedies which in these days are fast falling into disuse oil of turpentine stands out as a prominent example of undeserved neglect. This may be due in some measure to fear of possible irritation of the kidneys by the use of the oil, and to the taste of the remedy. With regard to the latter point, the oil can be given made up into capsules, but if comparatively small doses are required, it acts more efficiently and is fairly well disguised if it be rubbed up with the mistura amygdalæ of the *British Pharmacopœia*, well sweetened, and flavoured with oil of cloves. As to irritation of the kidneys, small doses such as 5 or 10 minims have little tendency to produce this result, and in large aperient doses (2 drachms to ½ oz. and upwards) the action of the drug is upon the bowels, and little of the oil gets absorbed into the circulation to pass through the kidneys and give rise to irritation. Either small doses or very large ones, then, may be given without misgivings. It is only the moderate dose of 30 to 60 drops which is to be used with caution, and its effect upon the kidneys heedfuly observed.

The value of turpentine as a hæmostatic should be tried upon a case of hæmorrhagic purpura. For years the writer has treated cases of purpura—when the complaint occurs, as it does so often, in well-nourished, full-blooded children—with purgatives, and looks upon oil of turpentine given in large doses in conjunction with castor oil as the best form in which the aperient can be administered. For a child of five or six years of age a dose of less than 2 drachms of the remedy combined with an equal quantity of castor oil has no aperient action upon the bowels nor any visible influence in checking the effusion of blood. If the dose first given is insufficient, the quantity may be increased without fear of doing harm; and for children of ten or twelve years as much as ½ oz. each of the two oils may be given every morning or every other morning, not only without any ill consequences but with great benefit to the patient. In one case there was some hæmorrhage from the kidney, probably due to the general hæmorrhagic tendency and not to the special action of the remedy. Turpentine, in fact, is as harmless as colocynth and far less drastic in its action. The best time for its administration is an hour after food, and the patient should be enjoined to remain quiet for another half-hour after the dose has been

taken. In the large doses, oil of turpentine given as recommended in conjunction with castor oil may justly be regarded as a specific for purpura, for a long experience has proved that a dose of 2 to 4 drachms given once in the day, either morning or evening, for a week or so will in the large majority of cases quickly put an end to the disorder. In cases where it does not succeed—and one meets with these from time to time—the aperient effect of the drug has been uncertain and ineffectual. In other words, the dose has been insufficient and should be increased. This form of treatment is only adapted to the sturdy, well-nourished patients in whom the disease breaks out suddenly upon a state of health. The weakly, wasted infants, who are also apt to suffer from the complaint, require very different medication.

Besides purpura, other forms of hæmorrhage may be arrested by the free internal use of turpentine. In hæmophilia a brisk terebinthinate aperient will sometimes bring about a cessation of the bleeding after local styptics have been used in vain. If necessary the dose may be repeated in six or eight hours. Great pallor and apparent weakness in the patient furnish no objection to this method of treatment.

Local bleedings, such as hæmoptysis and the melæna of typhoid fever, may be judiciously treated by the same remedy, but in smaller doses. The writer has seen arrest of the hæmorrhage to occur in both of these complaints under the use of the drug in doses of 10 or 15 minims three times a day; but its effect when thus administered is much more uncertain than in the case of the aperient doses recommended for purpura.

Turpentine in small doses is a valuable antiseptic and sedative in cases of flatulent colic and unhealthy states of the intestinal mucous membrane. In the abdominal cramps to which some children are subject, 3 or 4 minims, with or without double the quantity of castor oil, may be given three times a day rubbed up with a spoonful of mistura amygdalæ. If the attacks are severe, a small quantity of codeine may be added. Cases of tuberculous peritonitis benefit greatly from this combination. Thus for a child of 7 or 8 years, we may order 4 minims of oil of turpentine and 20 of the spirits of nitrous ether, with $\frac{1}{8}$ grain of codeina, to be made into an emulsion with the almond mixture and taken three times a day.

Infants, which suffer from an aggravated form of flatulence and colic which may even give rise to convulsions, are often greatly relieved by turpentine in minute dose given with a few drops of castor oil. For an eight months child we may order 1 minim of the rectified oil to be rubbed up with 3 minims of castor oil and 2 grains of gum tragacanth. This must be made up to a tea-spoonful with water. For such young patients it may be successfully disguised by adding to each ounce 1 drachm of the liquid extract of liquorice, 5 drops of the oil of cloves, and

20 drops of spirits of chloroform. It should be given every four hours and will do much to prevent the distressing accumulation of wind. If the paroxysms of colic are severe, $^1/_{30}$ grain of codeine may be added to each dose of the mixture.

In cases of hiccough 10 drops or so of turpentine given with 30 drops of spirits of nitrous ether in an aromatic water have a striking effect in putting a stop to a symptom which in a weakly patient is apt to be not only intractable but harassing and even dangerous.

The action of turpentine upon the mucous membranes is utilized in the treatment of hepatic concretions. A dose of 10 or 15 drops given two or three times a day after food not only relieves the catarrh of the bile ducts but also has a solvent action upon the gall stones. Again, in pyelitis arising from the irritation of retained gravel in the pelvis of the kidney, turpentine given in the same dose is very useful in checking the inflammation, although it has no solvent action upon the concretions. In these doses it is most conveniently prescribed in capsule.

Turpentine is also useful in the form of an enema. In cases of threadworms the vermicidal action of the remedy is strikingly manifested, and it has also a salutary influence upon the mucous irritation which is a constant accompaniment of ascarides if these be numerous. For a child of 7 or 8 years of age ½ oz. of the terebinthinate oil may be used for the injection at bedtime diluted with 10 oz. of barley water. The late Dr. Elliotson used to treat obstinate cases of amenorrhœa in young women with the same injection repeated once or twice a day, and maintained that its action was attended with almost invariable success. In flatulent colic a terebinthinate enema, if given hot, is a welcome addition to the use of remedies by the mouth and will often bring a severe attack to an immediate close. In the seizures of this kind which have been before referred to as common in infants the derangement is a cause of so much suffering that nothing which tends to shorten the attack should be neglected; and the injection of a drachm of the oil in 5 or 6 oz. of hot barley water thrown slowly into the bowel will often put an end to the distress and send the child into a quiet sleep. Employed in this manner the remedy is a diffusible stimulant of extreme excellence, and in taking stock of the various curative expedients at our command in such a case to omit it from the list would be voluntarily to abandon one of the most trustworthy of our resources. E. M. Brockbank.

Gelatine and Saline Injections in the Treatment of the Intestinal Hæmorrhage of Typhoid Fever.

Witthauer (K.). *Muench. med. Woch.*, May 5, 1908.

The writer gives details of four cases of hæmorrhage in typhoid fever which he successfully treated by subcutaneous injections

of 50 c.c. of Merck's 10% gelatine daily during the hæmorrhage and also by repeated saline injections given subcutaneously until two days had elapsed after the last appearance of blood in the stools. Reference is made to a recent article by Michaelis, who gives gelatine by rectal injections in typhoid hæmorrhage, with good results as regards the hæmorrhage, but a very high mortality as compared with that of Witthauer himself. Michaelis uses a 5% solution heated to 48 or 50° of which he gives a litre at a time, even from two to four times daily. One is hardly surprised to hear that perforation occurred in two of the eleven cases thus treated, of which five others also died.

FRANK E. TYLECOTE.

On the Use of Morphia in Affections of Infancy.

LESAGE (A.) and CLÉRET (MAURICE). *Arch. gén. de Méd.*, May, 1908, pp. 273—5.

THE authors confine their remarks to a plea for the use of morphia in laryngeal affections associated with spasm, in which the anti-spasmodics generally used are known frequently to fail. They regard as a heresy the old doctrine that opium is unsafe in disorders of infancy, and they employ the hydrochloride of morphia in a 1% solution, in what one might almost term heroic doses. The initial doses they use by injection, which are repeated if necessary, are as follows: up to one year of age $\frac{1}{3}$ c.c., in the second year $\frac{1}{2}$ c.c., in the third year $\frac{2}{3}$ c.c., and over three years 1 c.c. Cases thus treated ran a much shorter course and much more rarely needed operative interference than cases in which it was withheld.

FRANK E. TYLECOTE.

Graves' Disease and its Treatment.

THOMSON (W. H.). *Amer. Jour. Med. Sci.*, March, 1908.

THE writer's experience in the treatment of Graves' disease has led him to regard alimentary intoxication as a factor in the causation of this affection. In particular he affixes the blame to the consumption of meat, the symptoms abating when meat was rigidly excluded and recurring when patients returned to a meat diet. Each of the cases in which a late recurrence took place had so returned. Proper medical treatment in his opinion offers the best chances of recovery in severe cases; the cases without goitre are more difficult to treat. The standard article in the diet recommended is milk which must be fermented or peptonized to be digestible in the large quantities requisite. In less restricted cases a vegetarian diet is to be followed.

Medicinal treatment is given a high place and consists chiefly in a course of intestinal antiseptics, kept up for months at a

time. Phosphate of soda (30 grains) is given before each meal and a mercurial pill twice a week. Salicylate, benzoates, and naphthalene in capsule are among the antiseptics employed.

G. R. Mill.

Serum Investigations in Thyroid Conditions.

Hoffmann (R.). *Muench. med. Woch.*, 1908, No. 6.

This is a preliminary report of work bearing upon the actions and interrelations of certain internal secretions. The matter is highly speculative and the experimental support only briefly summarised.

Hyperthyroidism alone does not suffice to explain the symptom-complex of Basedow's disease, and the other organs with internal secretions must be taken into account. The thyroid and the adrenals are antagonistic, the former being specially related to the vagus, and the latter to the splanchnic The ovarian activity varies with that of the thyroid. Testicular extract has an action on the musculature similar to that of adrenal extract. Premising the foregoing as accepted results of physiological and clinical work, the writer proceeds to adduce clinical evidence of a relative adrenal insufficiency in Graves' disease and conversely of a relative over-function of the adrenals in myxœdema. Similarly in the frequent combination of osteomalacia with exophthalmic goitre he finds evidence of ovarian hypersecretion, while in certain developmental anomalies related to infantile myxœdema and in mongolism there have been observed signs of aplasia of the generative organs.

His conception is therefore in the case of exophthalmic goitre hyperthyroidism with relative adrenal insufficiency, sometimes complicated with hyperfunction of the female reproductive organs (osteomalacia), and in myxœdema hypofunction or aplasia of the thyroid with relative hyperfunction of the adrenals, sometimes complicated by aplasia of the generative organs (Mongolism).

The experimental method employed to test this conception was based on Ehrmann's observation that the presence of adrenalin in the blood can be demonstrated by its mydriatic action on the excised eye of the frog. In the absence of blood from cases of exophthalmic goitre or myxœdema the test was applied to the serum of the thyroidectomised sheep (Merck's antithyreodin), which showed a very high adrenalin content.

Mydriasis was obtained with :—

(1) Serum of thyroidectomised wether.
(2) Serum of 2 cases of myxœdema.
(3) Pollantin (Dunbar's hay-fever serum).
(4) Normal serum of sheep (slight).

Narrowing of the pupil occurred with :—

(1) Thyroid extract (slight).
(2) Exophthalmic goitre—2 cases.
(3) Case of osteomalacia.
(4) Case of myxœdema fruste (maximal).
(5) Case of mongolism (maximal).
(6) Patient with high degree of aplasia of the thyroid whose blood-pressure was over 300 Recklinghausen.

He was further able to confirm Croftan's assertion that adrenal extract contains a diastatic ferment and shows affinity for iodine. Adrenalin is always demonstrable in arterial blood, is diminished after passing through the liver and muscles and greatly enhances muscular work. It would thus appear to play some part in glycolysis, and Lazarus found hypertrophy of the adrenals and of the islands of Langerhans associated in phloridzin-diabetes.

He therefore suggests that Moebius' serum might be employed in diabetes, hæmorrhages, osteomalacia, in mongolism and the " formes frustes " of myxœdema, and in hay-fever and bronchial asthma. On the other hand the pupil-contracting substance occurring in the serum of cases of mongolism and myxœdema fruste might be useful in glaucoma.

G. R. Mill.

Reviews.

"The British Pharmaceutical Codex, 1907." An imperial dispensatory for the use of Medical Practitioners and Pharmacists. By authority of the Council of the Pharmaceutical Society of Great Britain. London: Published by the Pharmaceutical Society, 1907.

THIS large volume, of over 1,400 pages, is an attempt to supply information respecting all drugs and medicines in common use throughout the British Empire, including the principal substances and preparations which are official in the pharmacopæias of France, Germany and the United States, as well as those described in the British Pharmacopæia.

It has been prepared by an editorial committee and subcommittee, which include many well-known names, and the members may be congratulated on the result of their arduous and difficult work.

The arrangement is strictly alphabetical and on the lines of most pharmacopæias, each drug, preparation, or class of preparations having its separate monograph. In addition to the official drugs and preparations, numerous formulæ are included from various sources, among which we may mention the British Pharmaceutical Conference "unofficial formulary," some hospital pharmacopæias, and earlier editions of the British Pharmacopæia.

With regard to synthetic drugs, "special attention has been devoted to the nomenclature of substances of definite composition which are known under a variety of names, and it has been considered desirable to describe such substances under brief, more or less descriptive names, which have, in some instances, been specially devised for the purpose. Reference is made to trade-protected names and other commercial designations of such substances in footnotes to the respective monographs, though prescribers will prefer to encourage the use of names which everyone is free to use."

Of these newly-coined names some are particularly happy, *e.g.*, "adrenine"; others seem clumsy but are possibly the best available.

The biological preparations include six sera, viz.: antidiphtheritic, antiplague, antistreptococcic, antitetanic, antithyroid and antivenomous, and four vaccines, viz.: antiplague, antityphoid, antistaphylococcic and calf vaccine.

Lastly, a number of formulæ are given for obsolete preparations still employed as household remedies, for toilet preparations and flavouring agents, for capsules, compressed tablets, and other aids to administration.

Of course, in so large a work, many things present themselves for criticism; we feel, however, that it is at present a more or less tentative work, ambitious in its aim to bring together everything actually used for the treatment of disease, and we shall merely indicate a few points of general principle where we think improvement might be made in subsequent editions.

One point is the redundancy of preparations of a similar type and for identical purposes in therapeutics. Presumably the committee felt unable to decide as to the relative value of these preparations and in course of time the inferior will drop out of use and can be eliminated in future editions so that the redundancy will eventually disappear.

We do not think the committee well advised in giving a definite weight to pills. The pill masses of the pharmacopæia as well as the majority of the non-official formulæ are elastic in their dosage and the proper amount for each patient at the time when it is prescribed must be left to the judgment of the doctor; a pill of fixed size is of no value whatever for the majority of patients and perpetuates the bad habit of routine treatment by ready-made pills; the "elegant pharmacy" which gives to these articles their attractive appearance is dearly purchased by the loss of the power to adapt and combine the ingredients to meet the needs of each patient.

Another debatable point is the use of the term "mil" for the thousandth part of a litre; this term is so likely to be confused with miligram that we think its introduction unfortunate and fail to see that any practical difficulty arises from the use of the well-known c.c. to express the same volume. The doses are given in both metric and imperial systems, but the formulæ are given in percentages which is a distinct improvement on the somewhat clumsy double formulæ of the British Pharmacopæia.

The inclusion of pharmacological notes in a book of this character is another feature upon which opinions differ; we think that if not omitted entirely a simple statement as to the purpose for which a drug or preparation is used is quite sufficient and in some cases even necessary. Such a statement would not imply that it did any good and would not open up the often doubtful question as to the mode of action.

The number of misprints appears to be large even for a work of this composite character, and the list of corrigenda might be extended with advantage. Some indication as to which drugs and preparations are official would also be a useful addition. With these few criticisms of the general plan we can cordially recommend the "Codex" to the attention of all medical men (whether prescribers or dispensers) and chemists as a mine of information carefully selected and reliable and of a character such as is constantly in requisition in the work of daily practice. The addition of the letters "B.P.C." to a prescription for an

unofficial formula would be understood by all chemists and do much to check the habit of reliance upon proprietary preparations which is a lamentable feature of much of the medical practice of the present day.

"The Chemical Basis of Pharmacology." By Francis Francis, D.Sc., Ph.D., and J. M. Fortescue-Brickdale, M.A., M.D. London: Edward Arnold, 1908. Price 14s. net.

For the proper understanding of the many papers now published which deal with the chemical side of physiology, pharmacology and pathology, a much wider knowledge of organic chemistry is required than was the case even ten years ago. What is needed is a fair knowledge of general principles and reactions and a more minute and detailed account of certain groups of compounds of extreme importance in biological processes but which are often but scantily treated in all but the largest text books of chemistry.

To supply this knowledge so far as pharmacology is concerned has been the aim of the authors of this book, and on the whole they have succeeded. In a handy well-printed volume they have brought together the chief facts bearing upon the chemistry of those carbon compounds which play a part in the metabolic processes and also those which form the active principles of organic drugs and synthetic remedies.

It is essentially a text book of chemistry rather than of pharmacology, though the relation of the chemical constitution to the physiological action is much discussed and the classification adopted in the later chapters is rather pharmocological than strictly chemical.

A certain amount of chemical knowledge is necessary for its profitable perusal, but not more than is included in the ordinary medical curriculum, and with this as a basis it is easy for anyone to obtain from this volume a clear idea of the structure and properties of the alkaloids, glucosides, purin bases, coal tar derivatives and other compounds used in medicine, their relations to one another, and their possible reactions and decompositions in the body. The authors state their facts clearly and succinctly and have succeeded in making a somewhat dry and difficult subject more than ordinarily interesting.

A little more care in the proof reading would have avoided certain slips in the formulæ which may embarras the unwary reader; more references to original papers would also have greatly assisted the advanced worker. These, however, are trifling defects in a very useful work which should be in the hands of all interested in pharmacology and which is also of distinct value to the physiologist and pathologist as well.

"The Internal Secretions and the Principles of Medicine." By C. E. de M. Sajous, M.D. Vol. ii.

We reviewed the first volume of this work in 1903, and the long delay in the appearance of the concluding volume is explained by its size which is even larger than the first and brings the whole book up to nearly 1,900 pages.

The aim of the author is nothing less than a recasting of our present system of physiology, pathology and pharmacology, and consequently involving a revolution in practical medicine. His views are that the whole of the metabolic processes of the body are directly or indirectly under the control of what he calls the "adrenal system." This consists of the adrenals, the thyroid gland and the anterior pituitary body with nervous connections. Disturbance of the co-ordinated action of this adrenal system is for the author the cause of a vast number of pathological processes and in its harmonious working he finds the solution to the problems of immunity and recovery. In the first volume the physiological part of the work was considered at great length; in the second De Sajous endeavours to apply his views to the explanation of the pharmacological actions of the more important drugs which are assumed to act chiefly by stimulating or depressing some portion of the adrenal system and in that way to produce their therapeutical effects.

The last 500 pages are devoted to a review of the more common diseases and a system of treatment is enunciated based upon the author's views as to the action of medicines and the nature of disease. The adrenal system predominates all through and Dr. Sajous shows great ingenuity in claiming the efficacy of well recognised methods of successful treatment as arguments in favour of his views.

There seems to us a suggestion of a *petitio principii* in many of these explanations, and a careful perusal of some chapters leaves us still unconvinced as to the relation of the adrenal system to the diseases therein considered. Dr. Sajous has, however, succeeded in striking out an entirely original line of thought; he has brought together an enormous amount of information, hitherto widely scattered in medical literature, upon the internal secretions and allied subjects, and his book is well worth reading as a stimulant to thought and as presenting many familiar facts from a new point of view.

The great bulk of the work will undoubtedly repel many readers whose time is limited, and probably a shorter book would have attracted more general attention and led to a wider study of the subject from the author's point of view.